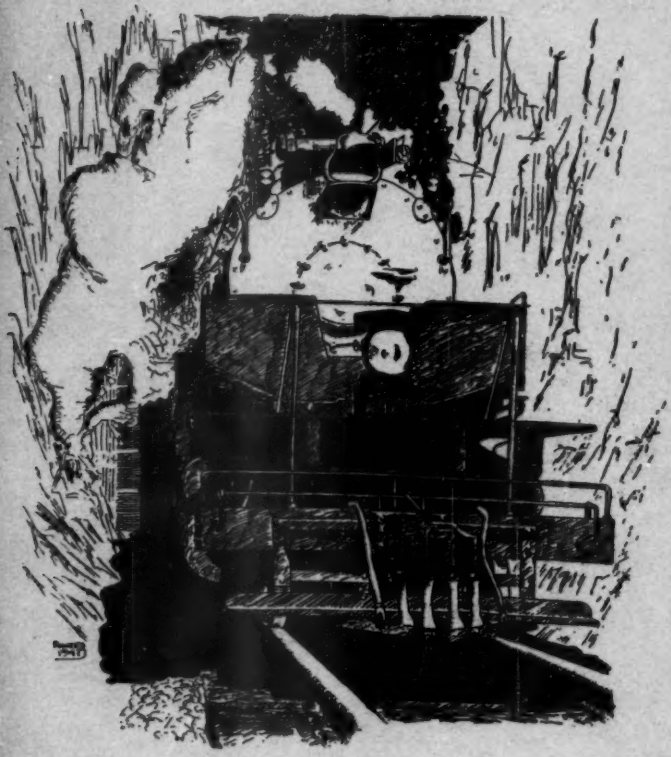
THE RAILWAY AND LOCOMOTIVE HISTORICAL SOCIETY, INC.

BULLETIN NO. 71



November 1947

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In presenting this publication to our members, the last for 1947, we are indebted to our good friend "Jerry" Best for a most interesting and comprehensive paper on the San Diego & Arizona Eastern R. R. and the roads that preceded this road. Aided through the efforts of Mr. Middlebrook, this carrier that started as an interurban passenger road, now a part of the Southern Pacific System has had an interesting history and we congratulate the authors for their fine piece of research which we are glad to present herewith.

To those of our membership who have enjoyed Mr. Hungerford's most recent work — "Men of Erie," we are glad to present a chapter on the Atlantic & Great Western Ry. This road had its own history up to the time of its consolidation and although this chapter follows closely that which appeared in the book, it has been adapted for our purpose.

We welcome a new contributor — Charles W. Turner, who has prepared a most interesting paper on three of the railroads in Virginia during the Civil War. In 1847, Canada completed the Montreal & Lachine R. R., and Mr. Robert Brown has prepared an interesting paper to mark this anniversary.

Lastly, we have departed a bit from our usual custom but next year marks the one hundredth anniversary of the death of George Stephenson. We have asked Miss Barrett to prepare a brief account of this famous engineer and we are glad to present it herewith. Incidently, Miss Barrett has prepared a most interesting and valuable biography on this gentleman. Whether it will be published in book form depends on some stout hearted American publisher willing to risk a venture on a British (Scotch) subject. To date, no one has been found to assume this risk and it seems most unfortunate that this interesting and valuable biography on the "Father of our Railways" cannot be published.

Canada Southern Ry. Roster

Since the publication of the roster of the Canada Southern Ry. locomotives, additional information has been received from Mr. Brown which should be recorded in our publication.

The 4-4-0 Grant engines of 1873, from what we have learned did not carry the numbers 32 — 36 in the 1871 series but were delivered under numbers 112 — 116. Also, the Schenectady engines of 1877 and 1879 were delivered under the numbers shown but they were renumbered 50 — 87 incl. before being renumbered in the 300 series. Thus 600 was renumbered 50 — 388; 601 was renumbered 51 — 389; 602 was renumbered 52 — 353; etc. This brings out more strongly the fact that in the original series, Nos. 32 — 49 incl. reserved for the T. C. S. & D. locomotives but these numbers were never used because of locomotives of other roads carrying these numbers, as explained in Bulletin No. 70. It also brings out the fact that the N. Y. C. engines in the five and six hundred series were renumbered into the C. S. series. The list as published in Bulletin No. 70 appears to be correct save for these changes which can be easily included in the printed roster.

Cover Design

Through an oversight on our part, the cover design on Bulletin No. 70 as well as this bulletin is that of a Great Northern locomotive rather than of the Northern Pacific. Some of our members spotted this error and we appreciate their corrections and regret making the error in the first place.

The San Diego & Arizona Eastern Ry. Co.

By R. P. Middlebrook and G. M. Best

Although completed as recently as 1919, the San Diego & Arizona Eastern Railroad was the final realization of plans first proposed in 1853, when Congress authorized surveys for a railroad along the 32nd parallel to the Pacific Coast. A company was organized under the name of San Diego & Gila, Southern Pacific & Atlantic, but nothing was accomplished beyond the preliminary survey.

In 1867, the Memphis, El Paso & Pacific, known as the "Fremont Route", made surveys from San Diego to Yuma, while another "paper" railroad called the San Diego & Fort Yuma was promoted between 1868 and 1871. In 1872 the Texas & Pacific made additional surveys between San Diego and Yuma, but eventually decided to route their line to the north, to Los Angeles.

In 1879 more surveys were started by a group of Boston financiers who were back of the A. T. & S. F., and proposed to build a railroad from the ship channel in San Diego to Ft. Yuma, to which point the Santa Fe would presumably build from the east. But the route of the Atlantic & Pacific, which was jointly being pushed west by the St. Louis & San Francisco and the Santa Fe, was changed to reach the California border at Needles, with traffic routed to Los Angeles via Mojave and the Southern Pacific. So in order to have any railroad at all, it was necessary to abandon plans for a line directly east, and the California Southern was built from National City to San Bernardino, connecting there a few years later with the A. & P. extension from Barstow.

But the idea of a direct outlet east from San Diego would not stay dead, and in 1893 a basic plan for a railroad from San Diego to Yuma was made in the incorporation of the San Diego & Phoenix, and while that road was never completed, the line which was actually built followed the surveys of the 1893 route to a large extent. San Diego wanted a direct rail connection with the main line of the Southern Pacific at Yuma, as freight shipments from San Diego to the east had to be routed over the Santa Fe, either via Los Angeles, or through San Bernardino and Orange. Probably civic pride had as much to do with building the line as anything, for thus would San Diego become independent of its big sister city 127 miles to the north, and theoretically, carload shipments could reach San Diego from the east in a day or so less time, though elimination of the transfer at Los Angeles or San Bernardino.

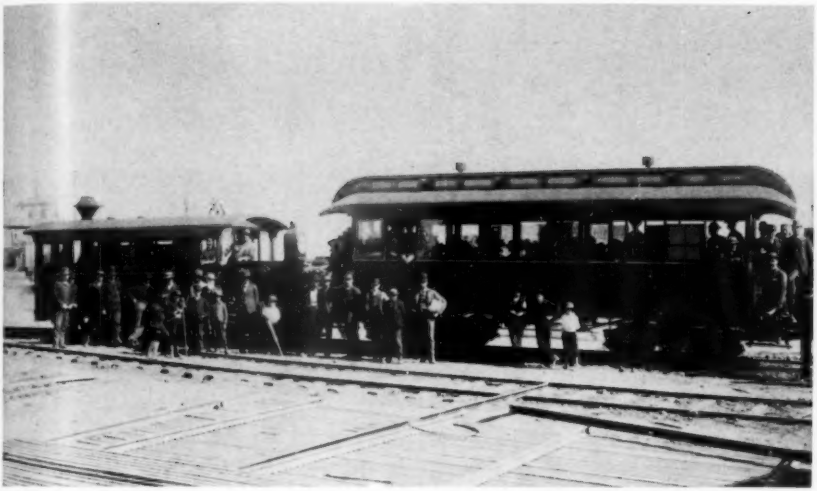
It remained for a group headed by the late John D. Spreckles of San Diego to push the plans through to completion, in spite of construction difficulties which at times made the task seem hopeless. As the cost of building was very high for the small distance involved, and the revenue lower than expected, the road barely earned operating expenses, with an operating ratio as high as 99% some years. Nothing was left over for interest on bonded indebtedness, or payments on the capital stock, which was owned about equally by the Southern Pacific Co., and John D. and A. B. Spreckels Co. of San Diego. Obviously the Southern Pacific was vitally interested in the line, as it enabled the S. P. to compete with the Santa Fe for San Diego business. To protect its interests, after years of continuous deficits, the Southern Pacific assumed complete control, changing the name of the road from San Diego & Arizona to San Diego & Arizona Eastern on February 1, 1932.

This reorganization took the Spreckles interests out of the picture, and since 1932 the Southern Pacific has gradually absorbed the operating functions of the road until today it is little more than a Southern Pacific branch line. The road serves as an industrial feeder for the communities to the south and east of San Diego, and it is the history of these feeder lines, together with a description of their motive power, which is the primary purpose of this research.

Originally built as surburban passenger routes before the days of electric interurbans, three separate companies, all begun in 1887, were gradually consolidated into one system called the San Diego & Southeastern, which in turn was taken over by the San Diego & Arizona shortly before it was complete. These suburban lines no longer have passenger service, and their original corporate names are familiar only to the oldest residents of the community. To present as clear a picture as possible of these predecessor lines, they will be listed individually according to seniority, and their gradual consolidation into one system will be given chronologically.

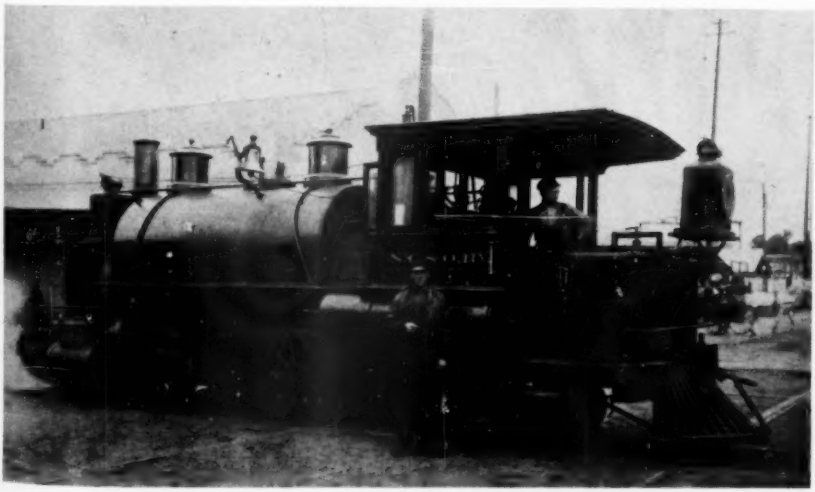
NATIONAL CITY & OTAY

The great land boom of 1886 to 1888 brought thousands of people to Southern California from all parts of the U. S., and San Diego received its fair share of this influx. Speculation in real estate was the order of the day, and while some came to settle permanently, the intent to make money, buying and selling land occupied the time of a large portion of the newcomers. Property frequently changed hands three times in one day, and subdivisions were laid out at all sorts of impractical locations, often miles from the nearest highway or town. The San Diego Land & Town Company, backed by a group of Boston capitalists was organized with headquarters at National City, several miles southeasst of the center of San Diego. This company subdivided the old Rancho Nacional and other large tracts between San Diego and the Mexican border. The Sweetwater Dam, then the largest in the U. S., and located about fifteen miles up the river from the bay, was built by this company,



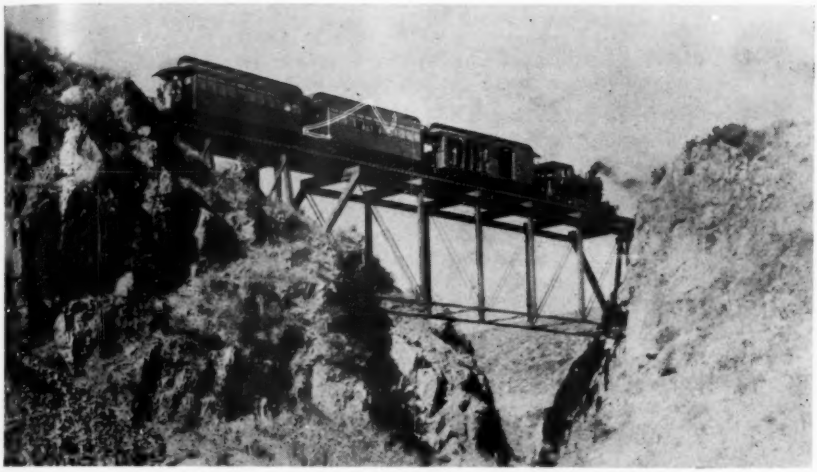
Courtesy of R. P. Middlebrook

N. C. & O. Ry. No. 1, "Wm. G. Dickinson", Fulton Iron Works, 1887.

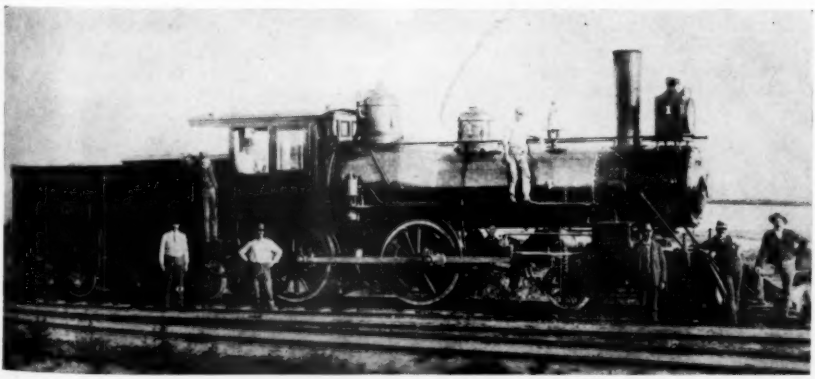


Courtesy of R. P. Middlebrook

N. C. & O. Ry. No. 6, "Tia Juana," Porter, 1888.



National City & Otay Train on Sweetwater Gorge Bridge



Courtesy of G. M. Best

S. D. C. & E. R. R. No. 1, Brooks, 1889, First engine on road.

and it provided water for an extensive irrigation project. A community around the base of the dam was a natural result of its completion.

Several railroads, then known as "Motor Lines", were projected in connection with these subdivisions, and among these was the National City & Otay Railway Co., organized by the Land & Town Co. on Dec. 27, 1886. The line was to extend from National City to San Diego to the north, and to Otay Canyon on the south, with a line through Sweetwater Valley to Cajon Peak at the southeast, with still another branch to tap Chollas Valley and Spring Valley. With a capital stock of $60,000 subscribed and paid in, the grading started in February 1887, tracklaying starting quickly thereafter.

Officials of the new road were W. G. Dickinson, Pres. and Director, F. A. Kimball, Vice-Pres. and director, W. C. Kimball, Samuel Baird and C. L. Josselyn, directors. The company sought to buy locomotives from Baldwin, but when that company could not supply them quickly, a contract for two motor type locomotives was let to the Fulton Iron Works of San Francisco. These locomotives arrived early in June 1887, by which time the roundhouse at 7th Ave. and 24th St. was ready, and rolling stock including open and closed type passenger coaches, and six flats, was on hand. The local newspapers described the new motive power as "strong and handsome", being boxed-in to resemble a closed coach, and "were thus not liable to scare horses." The first train left National City at 1 PM on June 14, 1887, with Engineer R. Barnhardt and Conductor Frank Martin, returning from San Diego at 3:10 PM and arriving at National City at 3:38 PM. A total of 550 passengers were carried the first day, and by June 23rd, newspapers acclaimed the success of the road with 1354 pasengers carried on that day alone.

The extension of the line south of National City, towards Otay, and up the Sweetwater Valley towards La Presa required additional locomotives and rolling stock. Three saddle tank 0-4-2 engines were ordered from the Porter Locomotive Works in Pittsburg, and by November 1887 when the first Porter engine arrived, four passenger coaches and four flats for the new extensions had been put in service. The line from Sweetwater Dam to La Presa proved very costly, having cuts through solid granite to a depth of 45 feet, and a bridge over Sweetwater Gorge 140 ft. long and 70 ft. above the water. Boastful advertisements of the time, proclaim the gorge to be a rival in scenic beauty to those found in Colorado.

Scenic or not, the road was a success, and by February 1888 the freight business became so heavy that the road could not handle all of it. There were 44 passenger trains a day, handling as high as 2600 passengers, and to give access to the heart of San Diego, a horse car line was built up Seventh St. to "B" St. Two more Porter locomotives were added to the roster early in 1888, and by July of that year the line reached Otay, with a branch to Oneonta. In 1895 an extension was built to the border at Tia Juana.

Traffic reached a peak of 64 daily trains, with 200 men on the payroll. San Diego was "wet" and National City was "dry", so the late trains

carried boisterous crowds, judging by newspaper accounts of the time, their comments noting the tendency of the passengers to burst into song on the return trips. Train crews on this run would stop the train in the center of the high Chollas trestle; then go through and collect the fares. They could thus be sure of a full accounting of all present.

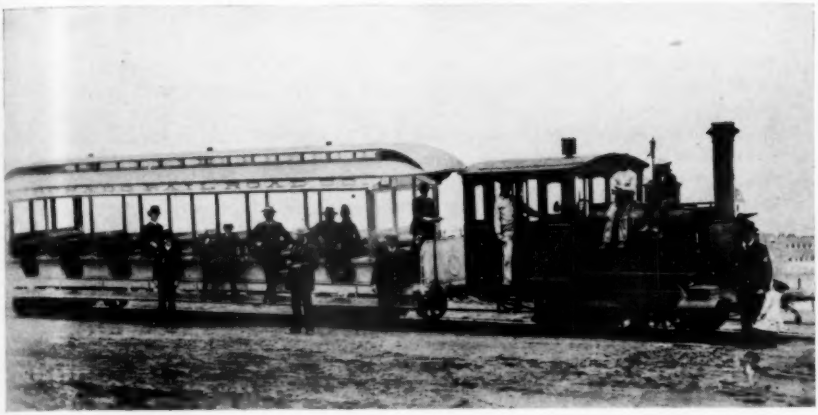
A timetable of 1895 showed stops on the Tia Juana run, called the "Main Line", as follows; San Diego, 25th St., 30th St., Una St., City Limits, 8th St., 4th Ave., 18th St., 24th St.; in National City, Olivewood, Terrace, Sweetwater Jct; Rosebank, Cunningham, Chula Vista, Melrose, Otay, Coronado Jct., Palm Ave., Nestor, Highland Ave., Schnell, Ware, Sterns, Tavan, Tia Juana. On the Sweetwater branch, from Sweetwater Jct. as follows; Mungers, Lynwood, Bonita, Phinney, Bonnie Brae, Sunnyside, Quarry Jct., Avondale, Aloha, Sweetwater Dam, La Presa.

With the bursting of the real estate boom after 1888, business began to fall off rapidly, and runs were curtailed, with many trains eliminated. Considerable traffic developed between San Diego and Tia Juana after 1895, but the bonanza days of passenger traffic were over. The line from San Diego to Otay was electrified in 1907, but it was some time before electric operation started. Four interurban cars were built in the company shops, at National City, from old Coronado Railway coaches and numbered 101-104. Later, six more cars were purchased from the Niles Company, Nos. 105-110. Of these, Cars Nos. 108-110 were assigned to the Point Loma Railroad and were so lettered. Later they were renumbered Point Loma Nos. 400-402. Coronado combination coach No. 5 was purchased and rebuilt into electric combination No. 111. The latter was lost in the Sweetwater river in the 1916 flood. The other cars were sold to the Pacific Electric in 1918.

The end of the National City & Otay as such came in 1909 when it was consolidated with the Coronado Railroad steam division, under the name San Diego Southern. Most of the original NC&O track was washed out in the 1916 flood and the line was never rebuilt. Today only four short stretches of the original line remain; ¼ mile on "L" St. in San Diego, a short section on Cleveland Ave. in National City, another on 3rd St. in Chula Vista, and a spur off the SD&AE between Palm Jct. and Nestor.

CORONADO RAILROAD

This road was begun less than a month after the NC&O at the San Diego end, but actually preceded the NC&O in that a short section of steam railroad known as the Coronado Beach RR was built in 1886, on Orange Ave. in Coronado, from the ferry landing to the site of the Hotel del Coronado. Service began about September 1, 1886, but in March 1887, the firm of Babcock & Story, of Coronado Beach, asked for contracts to build an electric line from San Diego to National City, ordering 250 tons of steel rail from England in anticipation of an early start. But the electric idea was apparently given up, and instead, plans were made for a steam railroad from San Diego to Coronado, for a franchise was re-



Courtesy of R. P. Middlebrook

N. Y. Elevated Ry. 34 on Coronado R. R. 1888.

Courtesy of R. P. Middlebrook

Coronado Beach No. 9. Apparently at official opening of the road June 14, 1888.

quested to operate steam motors out "N" St., from 5th St. to the city limits of San Diego. Then in January 1888, a petition was made to National City for a franchise to operate along 3rd Ave., as part of a continuation of the line from San Diego along the edge of the bay, around to the Silver Strand, then commonly known as the "Peninsula", that long, narrow strip of sand which connects Coronado Beach with the mainland, and thence along the Strand to Coronado. The NC&O fought the granting of this franchise, on the grounds that it would furnish competition with the Land & Town Co., but an agreement was finally reached whereby the Coronado RR would enter National City on 3rd Ave., turn west at 12th St. to 8th Ave., and run diagonally across two blocks until it paralleled the Southern California RR, past the SC roundhouse to the south limits of National City.

For motive power, a total of eight small saddle tank engines, four of them of the closed-in or dummy type, and a 4-4-0 were in use by the time the entire line was completed. The origin of some of these locomotives is not entirely clear. Baldwin built four steam motors in 1886 and 1887 for the University Heights Motor Road of San Diego, but has no factory record of having built any steam motors for the Coronado Beach RR or the Coronado RR. As the dates in service of the Coronado RR Nos. 1 to 4 correspond to the dates the University Heights Motor Road engines were shipped from Baldwin, it is assumed that the four motors found their way to Coronado RR. The four 0-4-0 tank engines were apparently ordered for the City Park Belt Motor Line, and some of them probably operated on that line during its few months of operation, but they ended up on the Coronado RR.

In building south from San Diego, two crossings had to be made with the NC&O; one at 22nd St. in San Diego, and the other on the dyke north of National City. The two roads fought bitterly for track space on "L" St. in San Diego, the Coronado finally laying their's one night to their new station. The first train between San Diego and National City was run April 19, 1888 and on May 3rd regular train service was established. Experiments with oil for locomotive fuel were made, using Engine No. 1, during April 1888, but the newspapers do not mention how successful they were. The section of the road from Coronado along the Strand was begun as a separate project, skirting the edge of Glorietta bay just as it does today, to the Strand, and thence along it to meet the construction crews coming from San Diego. Much difficulty was experienced crossing the marshes at the head of the bay, the grading equipment and teams often bogging down in the soft mud. Two gangs of Chinese totalling 150 men were employed to put in rock ballast, and on June 14,1888, the line was complete enough to permit regular trains between San Diego and Coronado.

For rolling stock, fifteen passenger cars were ordered from the St. Louis Car Co., in addition to open cars of the Coronado Beach RR already in service, and several coaches already received quite a few months before completion of the line. Four coaches were received in July 1888, two double-deckers arrived in June of that year, and by

September, all were in service. Train racing between the NC&O and Coronado trains, where the tracks were close to each other, was soon the order of the day, the Coronado claiming to have made the run between San Diego and National City in 11 minutes. However, a near collision at the crossing on the dyke put a stop to the sport, and all trains were required to stop before crossing. Many excursion trains were run directly from Los Angeles over the Southern California RR to San Diego, and thence via the Coronado RR to the city of Coronado. Newspaper accounts mention the Coronado RR acquiring additional coaches with paper wheels, patented noiseless running gear, pullman seats, rugs, toilets and stoves, to take care of the heavy traffic. An item of June 21, 1888 states "The dispatcher on the Coronado RR lost his head Sunday. Many heavily loaded trains were being run, and they frequently encountered each other at unexpected places where there were no passing sidings, forcing one train to back to the nearest passing place." A transfer switch at 9th Ave. and 12th St., National City was installed to connect the Coronado RR with the Southern California, so that excursionists could not jump off the train and go to San Diego via the NC&O.

With the collapse of the land boom, service fell to four trains a day around the bay, quite a contrast to the train every forty minutes which was the daytime schedule of 1888. However, a brisk business between the Coronado hotel and San Diego was maintained by the branch line along Orange Ave. in Coronado and the ferry to San Diego. This line was electrified in the latter part of 1893, eliminating steam trains from Orange Ave, and in 1901 an extension of the electric line was made from the hotel, along the Strand to Tent City, where a connection was made with the steam division. In 1896 all passenger service over the Strand was discontinued, when the road was leased to the Babcock interests for use in hauling rock for construction of the jetty at the entrance of San Diego bay. In later years, the Strand line was used for carload freight to Coronado, as it is today. In 1906, the entire steam division of the Coronado RR was operated by the NC&O on lease, and in 1909, the road was consolidated with the NC&O to form the San Diego Southern. The electric division, all in Coronado, was sold to the San Diego Electric Ry. Co. on July 1, 1908. The original Coronado line between San Diego and National City was torn up in 1919, but the rest of it, from 24th St. in National City to Coronado is still in use as a freight feeder for the SD&AE..

SAN DIEGO, CUYAMACA & EASTERN

Like the land boom railroads, the "Cuyamaca" was promoted in 1887, but it was primarily intended to serve the mining interests around Julian, and the farmers of the fertile El Cajon Valley. It was to be a narrow gauge steam motor line from San Diego to Julian starting at 22nd St. and building up the south Chollas Valley, Spring Valley, Jamacha and up the Sweetwater River to its headwaters, thence through

a pass in the mountains to the Valle de los Viejas, crossing San Diego and Boulder Creeks, to the Stonewall Mine. Later it was proposed to extend the line to Needles, creating rumors that the Union Pacific had bought the road to obtain a connection to Southern California.

The road was incorporated March 11, 1888 for $7,000,000, and a grand celebration was held April 26, 1888, with Gov. Waterman turning the first shovel of dirt. In October 1888, a contract was let for 225 miles of ties, enough to reach Needles, and by January 1889, the road had been graded as far as El Cajon, with ties and rails arriving steadily. But instead of building to narrow gauge, the track was made standard to conform with the other roads then building out of San Diego, and this enabled the contractors to lease two locomotives from the Southern Pacific to perform the necessary construction work. One of these locomotives was S. P. No. 106, a 4-6-0, the first of that road to enter San Diego. After a temporary halt in construction in February 1889, due to lack of funds, since some of the subscribers to the stock had failed to pay their subscriptions, Mr. F. A. Kimball of National City, a director of the NC&O, provided the necessary financial support, and work was pushed with seventy teams and three hundred men. On March 31, 1889, the road was completed to Foster, and since there was no town or settlement of any size east of that point for some distance, construction ceased and was never again resumed. A grand excursion was run to Lakeside that day, with two trains of coaches, box cars and anything with wheels, many people riding on top of the cars for the lack of room inside, Gov. Waterman the principal stockholder, was present, and was the orator of the day.

A regular schedule of passenger trains to Foster from San Diego was established, and three locomotives were required to operate them. As late as 1911 there were 18 daily passenger trains, one mixed train and one freight. In 1909 the road was reorganized as the San Diego & Cuyamaca, and in 1912 it was consolidated with the San Diego Southern to form the San Diego & Southeastern. The line is still in use as a freight spur of the SD&AE as far as El Cajon, with the rest of the track having been pulled up some years ago. Passenger service dwindled rapidly under competion from the busses, and even the use of a McKeen Motor car failed to sustain it.

SAN DIEGO SOUTHERN

Chartered Feb. 5, 1908, it took over the properties of the National City & Otay, and the steam division of the Coronado Railroad, the consolidation taking place July 1, 1908. Locomotives and equipment were relettered, and the schedules were changed to permit more economical operation of the two properties. In 1912 the road was consolidated with the San Diego & Cuyamaca to form the San Diego & Southeastern.

SAN DIEGO & SOUTHEASTERN

Chartered March 2, 1912, it comprised the lines of the San Diego Southern and the San Diego & Cuyamaca. Combined operation of the two systems resulted in further economies, and the road continued to enjoy a good passenger business to Tia Juana. In 1917 it was purchased by the San Diego & Arizona.

SAN DIEGO & ARIZONA

Plans for building this line over the right of way it now occupies were formed as far back as 1893, when a group of San Diegans incorporated the San Diego & Phoenix, which proposed to build a standard gauge line south from San Diego over easy grades into Baja California, Mexico, and thence through that country over an ascending grade to the entrance to the Carrizo Gorge, thence through the gorge to the east end and downhill over an easy grade into the Imperial Valley to El Centro, a distance of 148 miles. As incorporated, the San Diego & Phoenix was to further extend its line to Arizona, and by 1895 a total of 13 miles of track had been laid to South Otay, with grading further south to the border. But there was insufficient interest behind the project to keep it going, and it died for lack of support, becoming a stock promotion scheme along with countless others of that era.

But in 1906, interest in an eastern connection for San Diego became sufficiently acute to cause the San Diego & Arizona Railway Co. to be chartered December 15th of that year. The original officers were John D. Spreckels, President, W. Clayton (also President of the San Diego, Cuyamaca & Eastern), Vice President, Claus Spreckles and H. L. Titus, both of San Diego, directors. The line was capitalized for $6,000,000.

Construction was begun from both ends simultaneously, and followed in many places the surveys of the long forgotten San Diego & Phoenix. By 1910 the line had reached Eduardo, east of Tia Juana, while the eastern section had been built west from El Centro to Dixieland, 10 miles. From the two above terminii, the road progressed about 7 miles a year for each section until the difficult Carrizo Gorge was reached. This barren, rocky defile, with walls 1500 feet above a dry river bed, required eleven miles of the most spectacular railroad construction on the continent. The only approach from the west end was at an elevation of 900 feet above the river bed, and to keep the railroad on an even grade and minimum curvature, a large amount of tunnelling and rock cutting was required. In many places the walls were so sheer that it was not possible to cut a shelf in the rock, and due to the face of the cliff being irregular, a straight bore through the cliff was out of the question. Alternate sections of tunnels and trestles was the solution, and the latter provide breath-taking views of the gorge below. A total of 17 tunnels, the longest being 2604 ft., and the shortest 287 ft. were cut through solid rock, for a total length of approximately 3 miles. These tunnels proved to be a serious operational hazard in later years, when caveins, fires and slides

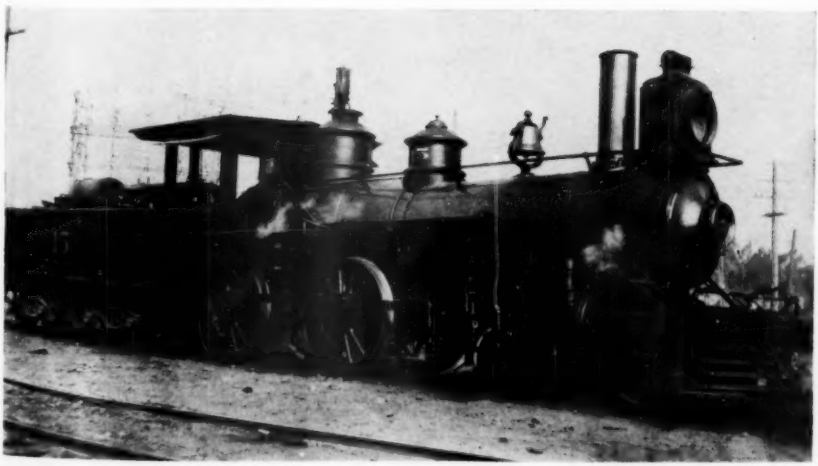
Courtesy of R. P. Middlebrook

S. D. S. No. 3, Porter, 1887. Ex. N. C. & O No. 3.

S. D. & S. E. No. 5, Porter, 1912.
In the opinion of your Editor, this locomotive looks much older than if it was constructed in 1912.

Courtesy of R. P. Middlebook

S. D. & S. E. No. 6, Porter, 1888.



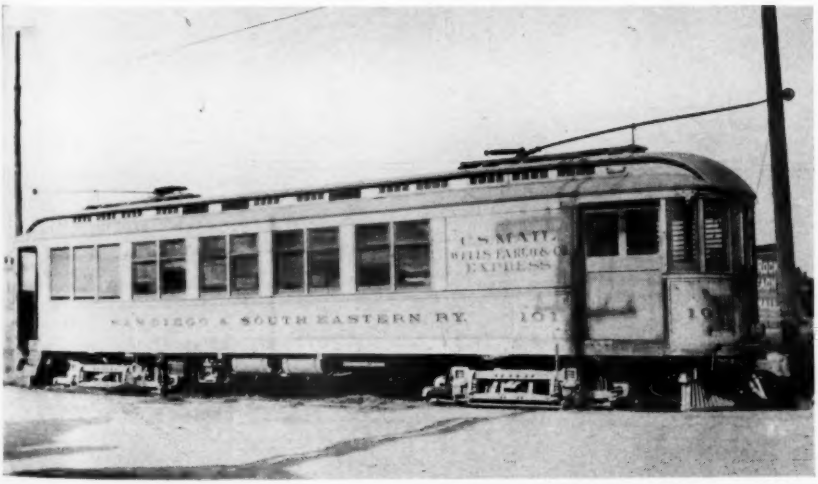
Courtesy of R. P. Middlebrook

S. D. & S. E. No. 15, Rhode Island, 1881.

First Engine on South California R. R.

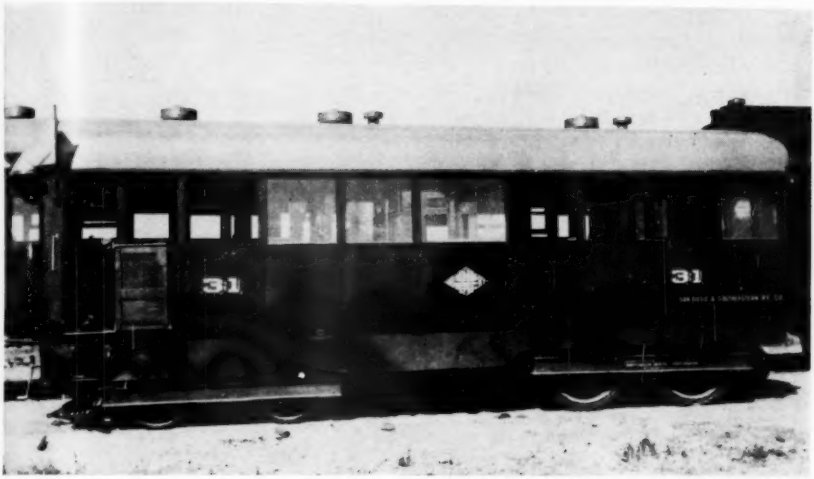
Courtesy of R. P. Middlebook

S. D. & S. E. No. 21, Schenectady, 1887.



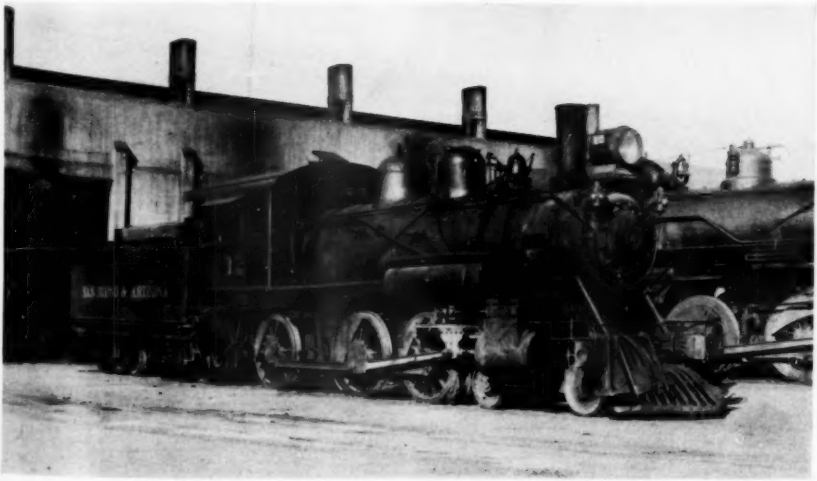
Courtesy of R. P. Middlebook

S. D. &. S. E. Ry. No. 101 Ex Coronado Ry. Coach No. 101.



Courtesy of R. P. Middlebook

S. D. & S. E. Ry. No. 31, San Diego



Courtesy of R. P. Middlebook

S. D. &. A. No. 12, Pittsburgh, 1912.

closed down the road sometimes for months. This eleven mile section cost $3,939,000, or an average of $358,000 per mile, a cost so high that it is no wonder the road was unable to earn an adequate return on a total investment of 18 millions.

Construction work continued on the road throughout the first World War, it being the only railroad in the U. S. to build during that conflict. On Oct. 1, 1917, it purchased the San Diego & Southeastern, thus consolidating all the steam suburban lines of San Diego except the La Jolla line, into one system. During the isolation of the eastern half of the line, such part of it as was of use commercially was leased to the Holton Interurban Terminal Ry., a shortline extending from El Centro to Holtville. Final completion of the road took place on Dec. 1, 1919, on which date a through train from San Diego to the east was operated. Pullman sleeping cars run from San Diego to El Centro, where they were turned over to the Inter-California Railway, a new line built from Calexico to the S. P. main line a few miles west of Yuma, and for the most part in Baja California. This road owns no motive power or rolling stock, being operated by the Southern Pacific. The SD&AE train today operates as a unit from San Diego to Yuma, Ariz., with a change of locomotives at Calexico. At Yuma, the sleepers are cut into a Chicago bound train on the S. P. which in turn operates over the Rock Island east of Tucumcari, N. M.

That part of the San Diego & Arizona within the State of Baja California was incorporated as the TiaJuana & Tecate Ry., but like the InterCalifornia, it owned no rolling stock. Throughout the period from 1919 to 1932, the road was beset by frequent interruptions from the tunnel fires and caveins, with the inevitable loss in revenue which brought about a reorganization. On Feb. 1, 1933 the San Diego & Arizona Eastern Railway was incorporated, with all the capital stock owned by the Southern Pacific, which assumed active control of the operations of the road. But the effect of the depression of the 1930 era which was then in full swing was too great to enable the road to earn operating expenses, the operating ratio rising as high as 125% in some years.

During the racing season at Aqua Caliente, two miles south of the border, special trains were run frequently, including through trains over the Santa Fe from Los Angeles, but the competion of the four-lane high speed auto highway from Los Angeles to San Diego sounded the death knell of the racing specials, and even the motor cars were finally taken off, leaving only two trains a day between San Diego and El Centro. In an effort to cut operating expenses, the Southern Pacific has placed the road under the control of the Supt. of their Los Angeles Division, and taxes and other fixed charges have been reduced by scrapping a number of locomotives, retiring all the wooden, open ended passenger cars which had been used for race track specials, and tearing up such passing sidings as were not absolutely essential. Rolling stock of the Southern Pacific is borrowed when needed, and S. P. motive power, including that of another S. P. subsidiary, the Northwestern Pacific, is frequently seen in San Diego. Inasmuch as San Diego nearly doubled its population

during the war with Japan, a traffic record peak was reached in the closing days of the war and the road undoubtedly justified its construction during that period, if not at any other time.

THE LA JOLLA LINE

Operated under four different names, this road from San Diego to the town of La Jolla does not warrant inclusion in a history of the San Diego & Arizona, except for the fact that it was for a time controlled by E. S. and Graham Babcock of the Coronado RR, and equipment and motive power were interchanged frequently. In addition, by listing the La Jolla line, all suburan steam railroads in the San Diego district are thus compiled, except the line operated by the Pacific Mail S. S. Company.

First incorporated in August 1886 as the San Diego & Old Town Railway, it was designed as an electric road using a motor car to draw a trailer, the motor to be furnished by the Henry Electric Co. Constructed in May 1887 from "D" St. in San Diego, now Broadway, the line went out Arctic St., now Kettner Blvd., reaching Old Town on Nov. 21, 1887. The electric motor cars were used for only ten days, however, being withdrawn from the Old Town line on account of a contract the Electric Rapid Transit Co. had to operate the 4th St. line to University Heights by Jan. 1, 1888. On the latter road, the motors were used intermittenly for about a year, their place on the Old Town line being taken by a steam dummy locomotive.

In April 1888 the road was re-incorporated as the San Diego, Old Town & Pacific Beach, being extended to Pacific Beach by May of that year, necessitating the purchase of two more locomotives. A brisk traffic resulted, and with the acquisition of the road by the Babcock & Story Co. of Coronado, in 1894, the line was extended to La Jolla, under the name of San Diego, Pacific Beach & La Jolla. On April 1, 1906, the road was reorganized as the Los Angeles & San Diego Beach with E. S. Babcock as President, and under that name it operated until 1917 when it was abandoned and the rails removed. During this latter period, the road operated an electric connecting line in San Diego, between the La Jolla Line terminal, and the San Diego & Cuyamaca depot, four electric cars being employed in this section.

MOTIVE POWER

NATIONAL CITY & OTAY; — The entire roster consisted of saddle tank suburban type locomotives, although No. 7 was classed as a freight locomotive, as it had six drivers and was heavier than the others. The two Fulton Iron Works engines were of the enclosed body, or dummy type, but the others were typical Porter Saddle tankers of a design seen on numerous industrial and suburban roads during that era. The first two engines lasted less than 15 years, and were apparently too badly worn out to be worth selling to lumber roads or industrial lines. The Porter

engines were of sturdier stock, and most of them lasted through the two reorganizations of the road. No. 7 was an 0-6-0T when delivered, but the NC&O added a 2 wheel trailer.

CORONADO RR.; — The original roster consisted of the eight small tank engines previously mentioned, Nos. 1-4 being of standard Baldwin dummy type, and Nos. 5-8 were Rhode Island 0-4-0Ts from the New York Elevated. The latter arrived on the road after a short period of service on the City Park Belt Motor Line, and some of them still had their original NY Elevated road numbers, as Coronado No. 5 operated for some time with road No. 34 before it was renumbered 5. At an undetermined time, the 4-4-0 was acquired, probably during construction of the road. It was numbered 13 at first, but was renumbered 9 eventually. It was a Rogers, built prior to 1870 judging from photos, and some believe it was one of the two S. P. engines leased to the Cuyamaca contractors. However, a study of the Rogers locomotives on the Central Pacific and Southern Pacific showed that it was extremely unlikely that Coronado No. 13 came from those roads.

During the construction of the jetty at the mouth of the bay, Mr. Babcock bought two additional locomotives to work on the job, No. 10 being a Vauclain Compound Forney from the Chicago & South Side Elevated, and the other, numbered 2nd 1, was an 0-4-0 tender engine purchased from a Denver contractor, who had originally bought it from the Northern Pacific. After the work on the jetty was completed, No. 10 was scrapped, and 2nd 1 was sold to the La Jolla Line as their 2nd 3. In July 1905, all the original locomotives except No. 8 having been sold or scrapped, a new Porter 2-4-2 saddle tanker was purchased, and at the time of the consolidation with the NC&O, this was the only locomotive owned by the Coronado Railroad.

SAN DIEGO, CUYAMACA & EASTERN: — The first engine on this road was a Brooks 4-4-0 which consistently proved itself too heavy for the track, so upon the arrival of a new mogul from Porter in 1892, the 4-4-0 was sold to the Southern California. In 1894 a second hand Pennsylvania RR 4-4-0 was acquired from an eastern dealer, and which lasted 20 years on the Cuyamaca. In 1902 another 4-4-0 was purchased from the Santa Fe, and later a third 4-4-0 was bought from F. M. Hicks in Chicago, it being an unidentified one of group of Union Pacific 4-4-0s bought by Hicks between 1901 and 1908. In the last years of the Cuyamaca, a McKeen Motor car was purchased.

SAN DIEGO SOUTHERN: — During the existence of this road name, two new Porter 2-4-2 saddle tank engines, exactly alike, were acquired and given vacant numbers in the roster.

SAN DIEGO & SOUTHEASTERN: — Shortly before this road was formed, the San Diego & Cuyamaca bought two 4-6-0 locomotives from the S. P., and these retained their S. P. road numbers until the formation of the SD&SE. A third SP 4-6-0 was acquired right after the consolidation, and in 1912, the SD&SE bought a new ten-wheeler from Alco, No. 23, and as of 1945, this is the sole remaining engine on the SD&AE which operated on the San Diego & Southeastern.

SAN DIEGO & ARIZONA: — When construction began, the road purchased one new locomotive from Alco, an 0-6-0 numbered 1. When there was sufficient track to warrant a road engine, a 2-8-0 was bought from Baldwin, No. 50, and in 1914, when the line east of San Diego extended far into the back country, two more 2-8-0s considerably larger than the 50 were ordered from Alco, Nos. 101 and 102. These four engines made up the SD&A roster during the construction period until the SD&SE was acquired. The latter's locomotives retained their road numbers as they did not conflict with SD&A numbers.

Upon completion of the line, additional motive power was needed immediately, and for the passenger trains, four ten-wheel Baldwins were purchased second-hand from the firm which had just scrapped the Las Vegas & Tonopah. In addition, the SD&A purchased from Hyman-Michaels a 4-6-0 locomotive chassis in fairly good condition, this being all that was left of Bullfrog-Goldfield No. 12, which blew up on that line before it was abandoned. A new boiler was built for this chassis by the Southern Pacific shops at Los Angeles in 1919, with the distinguishing characteristic of a very short smokebox, making it easily recognizable a long distance away. This engine was leased to the S. P. a year after it was placed on the SD&A as No. 20, and it operated continuously on the SP until 1943. In 1942 it was renumbered SP 2385, and while it now operates on the SD&AE, it still retains its SP number. With the No. 20 went one of the four Baldwin 4-6-0s, No. 26, which still remains on the SP as their No. 2386. These two engines were traded for the use of two heavier S. P. 4-6-0s, as the LV&T engines proved too light to handle the heavy steel coaches and Pullmans which made up the daily Limited. For many years, S. P. Nos 2345 and 2354 operated the Limited, but in recent years the S. P. has worked a group of 4-6-0s between Los Angeles, Calexico and San Diego in pool service.

A few of the SD&SE engines were of more than passing interest. No. 15 was the bearer of an extremely large whistle of very low and musical tone. The legend runs that the Manager of the SDC&E used to admire a whistle on a tramp steamer that frequently called at San Diego, and swapped a locomotive bell and some cash to boot, for the whistle. It was mounted on his favorite engine, then numbered 3, and it remained on the engine even after it was sold to the La Jolla line many years later.

SD&SE 20 had an especially interesting career. Built at Cooke in 1876 as Central Pacific No. 213, then CP 1578 and finally SP 2011, it operated on the SD&SE until 1917, when since it was deemed not worth taking over by the SD&A, it was sold to Sharp & Fellows, contractors, to help build an army camp near Tucson, Ariz. After the war, the engine was bought by the Arizona Eastern, a subsidiary of the S. P., and a few years later, the boiler having been condemned, another boiler was mounted on the chassis, this being from Arizona Eastern No. 270, a Baldwin 4-6-0 of similar dimensions. Eventually this engine became S. P. deM. No. 215, and remained in service until 1940.

SD&SE No. 21, renumbered SD&A No. 10 in 1920, was used as a switch engine at San Diego and Calexico for many years, and during

its last two years of service, which was at Calexico, it had a tank with Southern Pacific Lines lettered on it, so it began and ended its service under the S. P. banner. It was scrapped at Los Angeles in 1938, but its headlight is still preserved by a member of our Society as a den ornament.

One of the most travelled engines of the SD&AE was its most recent acquisition. This engine, No. 3, bought second hand from the S. P. in 1936, was returned to that road in 1940 and operated on the Los Angeles Harbor Belt Line Railroad. It retained the road No. 3, but was relettered with Belt Line characters. A few months later, it was given a tender lettered Southern Pacific Lines, and shortly thereafter it had a tender lettered Pacific Electric. Later it was renumbered P. E. No. 1508, which number it still bears.

At the present writing, only seven locomotives remain with SD&AE lettering, These are Nos. 1, 12, 27, 50, 101, 102 and 105. All locomotives are now shopped at Los Angeles and Bakersfield, instead of at San Diego, and the old back shop there is used for inspection and minor repairs. Most of the passenger cars bought in 1919 were from the Southern Pacific. Many were open platform wooden coaches, used on the race track specials, and there were four very handsome cafe-observation cars which ran regularly on the Limited. These latter are now retired to Maintenance of Way service, while the wooden coaches are mostly section houses.

LA JOLLA LINE; — The early roster of the La Jolla Line consisted of three enclosed type tank engines, two of which were bought new from Baldwin. No. 1 was the original San Diego & Old Town Dummy, which was received on the road October 3, 1887, from the National Iron Works in San Francisco. Some time after the Coronado Railroad was completed, a trade was made between the La Jolla Line and the former road, the Coronado RR sending No. 5 to the La Jolla Line in trade for their No. 2. In later years, the Coronado rebuilt the engine they received, removing the enclosed body and converting the engine into an 0-4-2 tender engine, selling it back to the La Jolla Line. At the time of the final reorganization, a 2-4-4 suburban type engine was bought from the Holton Interurban Terminal Ry., this locomotive having been acquired by them from the New Haven. In the last years of the road, No. 15, the 4-4-0 with the special whistle, was bought from the SD&SE. No. 1 was rebuilt about 1906 and the enclosing wooden body removed. Two McKeen Motor Cars and a gasoline motor made from an old Mack Truck provided additional service, and these were all sold or scrapped at the time of the abandonment.

LOCOMOTIVE LIST

National City & Otay

1	0-4-2T	Fulton Iron Wks., S. F.		5/1887	"Wm. G. Dickinson" Dummy type Scrapped in 1895 22,000 Total Wt.
2	0-4-2T	Fulton Iron Wks., S. F.		5/1887	"A. B. Lawrie" Dummy type Scrapped 1902 Oil burner
3	0-4-2T	Porter	No. 876	10/1887	"National City" 28,000 On Driv. To San Diego Sou. No. 3 7/1908
4	0-4-2T	Porter	No. 884	10/1887	"Sweetwater" 28,000 On Driv. To San Diego Sou. No. 4 7/1908
5	0-4-2T	Porter	No. 905	10/1887	"Chula Vista" 28,000 On Driv. To San Diego Sou. No. 5 7/1908
6	2-4-2T	Porter	No. 943	1/1888	"Tia Juana" To San Diego Sou. No. 6 7/1908
7	0-6-2T	Porter	No. 945	1/1888	"San Miguel" 54,000 On Driv. To San Diego Sou. No. 7 7/1908

San Diego & Cuyamaca

San Diego, Cuyamaca & Eastern

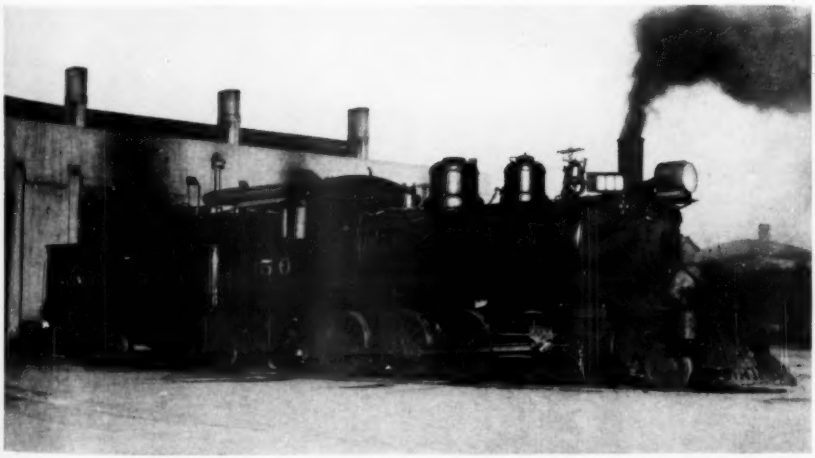
1	4-4-0	Brooks	No. 1544	6/1889	62-17x24 Sold To Sou. Calif. RR No. 8—1892
1	2-6-0	Porter	No. 1375	7/1892	48-14x18 Rebuilt new boiler 1904. To S. D. & S. E. No. 11—1912
2	4-4-0	Altoona	No. 208	8/1873	Ex PRR 2158—Phila. & Erie 2020—PRR 652 Acquired 1894. Scrapped in 1914
3	4-4-0	Rhode Is.	No. 941	1881	Ex AT&SF 012—Sou. Cal. 3—Cal. Sou. 1. 58-16x24. Acq. 4/1902 To S. D. & S. E. No. 15—1912
4	4-4-0	Schenectady		1889	Ex Union Pacific. Acq. 1904 from F. M. Hicks. 62-18x26. To S. D. & S. E. No. 14—1912
1	Motor	McKeen Co.			Sold to U. S. Reclamation District, Yuma, Ariz. (Yuma Valley RR).

Coronado Railroad

1	0-4-2T	Baldwin	No. 8036	7/1886	Ex University Heights Motor Road No. 1 Dummy type. Sold 7/1903
2	0-4-2T	Baldwin		1887	Ex U. H. M. R. No. 2 Scrapped 1902
3	0-4-2T	Baldwin	No. 8734	8/1887	Ex Univ. Hgts. Motor Rd. No. 3 Sold to Jardine Machinery Co. 1/1903
4	0-4-2T	Baldwin		1887	Ex U. H. M. R. No. 4 Sold to Jardine Lumber Co. 9/1902.
5	0-4-0T	Rhode Is.	No. 719	1878	Ex N. Y. Elevated No. 34 38-10x14. Sold to S. D. P. B. & L. J. No. 2 9/1903
6	0-4-0T	Rhode Is.		1878	Ex N. Y. Elevated 38-10x14. Sold to Albion Lumber Co. 5/1902.
7	0-4-0T	Rhode Is.		1878	Ex N. Y. Elevated 38-10x14. Scrapped prior 1902.

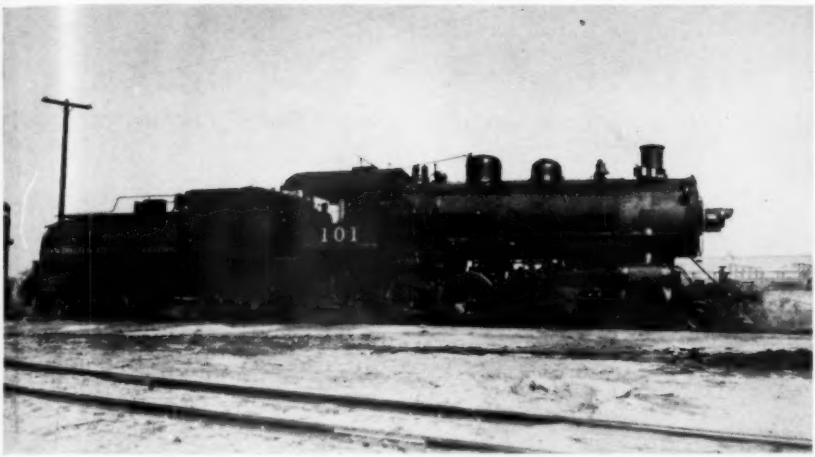
Courtesy of G. M. Best

S. D. & A. No. 26 at Los Angeles 1919, Baldwin 1907.



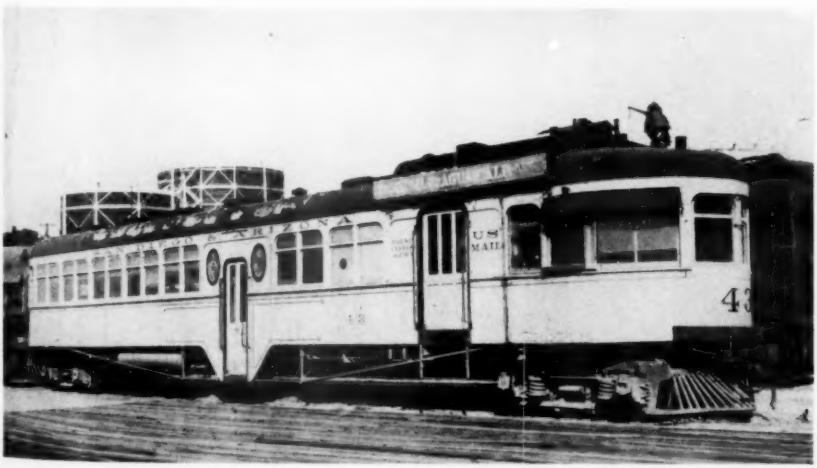
Courtesy of G. M. Best

S. D. & A. No. 50, Baldwin, 1911.



Courtesy of G. M. Best

S. D. & A. E. No. 101. Schenectady, 1914, Los Angeles 1945.



Courtesy of R. P. Middlebook

S. D. & A. No. 43, San Diego, 1935 G. E. —Schen. No. 3707 Ex. B. R. & P.

Courtesy of G. M. Best

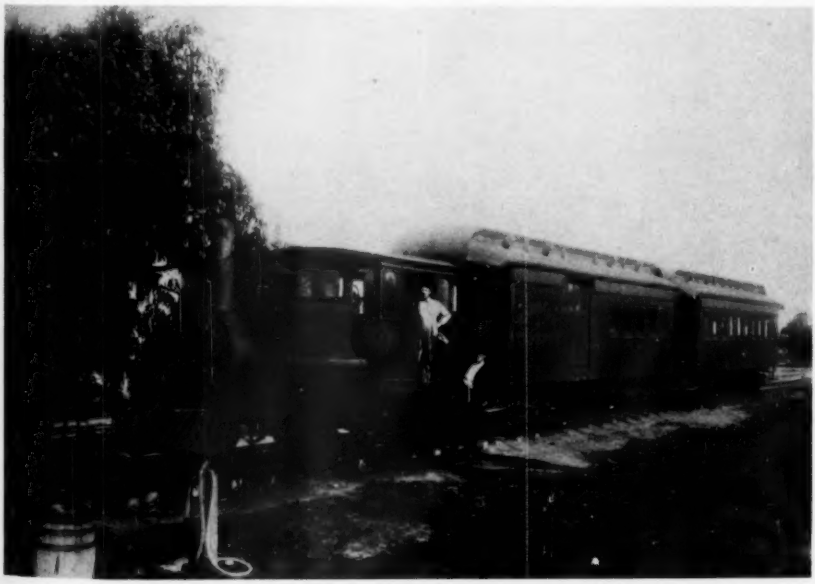
Carrizo Gorge from the El Centro Approach.

Courtesy of G. M. Best

Carrizo Gorge Trip of a Los Angeles Railfan Group Dec. 1940.

Courtesy of R. P. Middlebrook

S. D. & P. B. No. 1, National Iron Works, 1887, photo 1888.

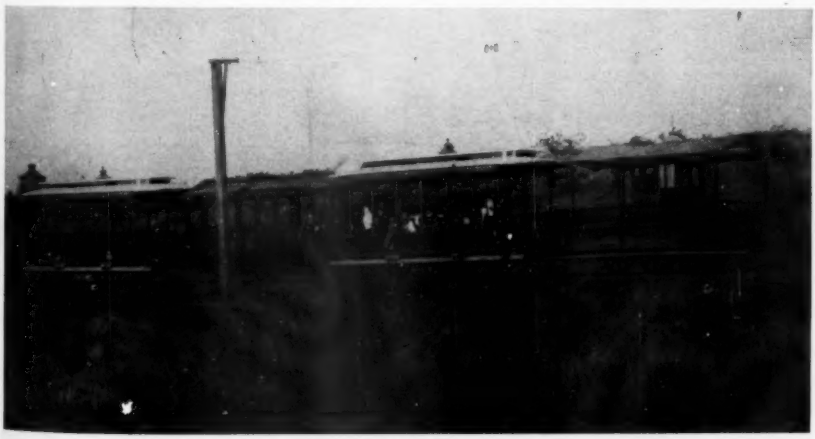


Courtesy of R. P. Middlebrook

S. D. P. B. & L. J. No. 2, Rhode Island, 1878 Ex. Coronado No. 5 Ex. N. Y. Elev. No. 34

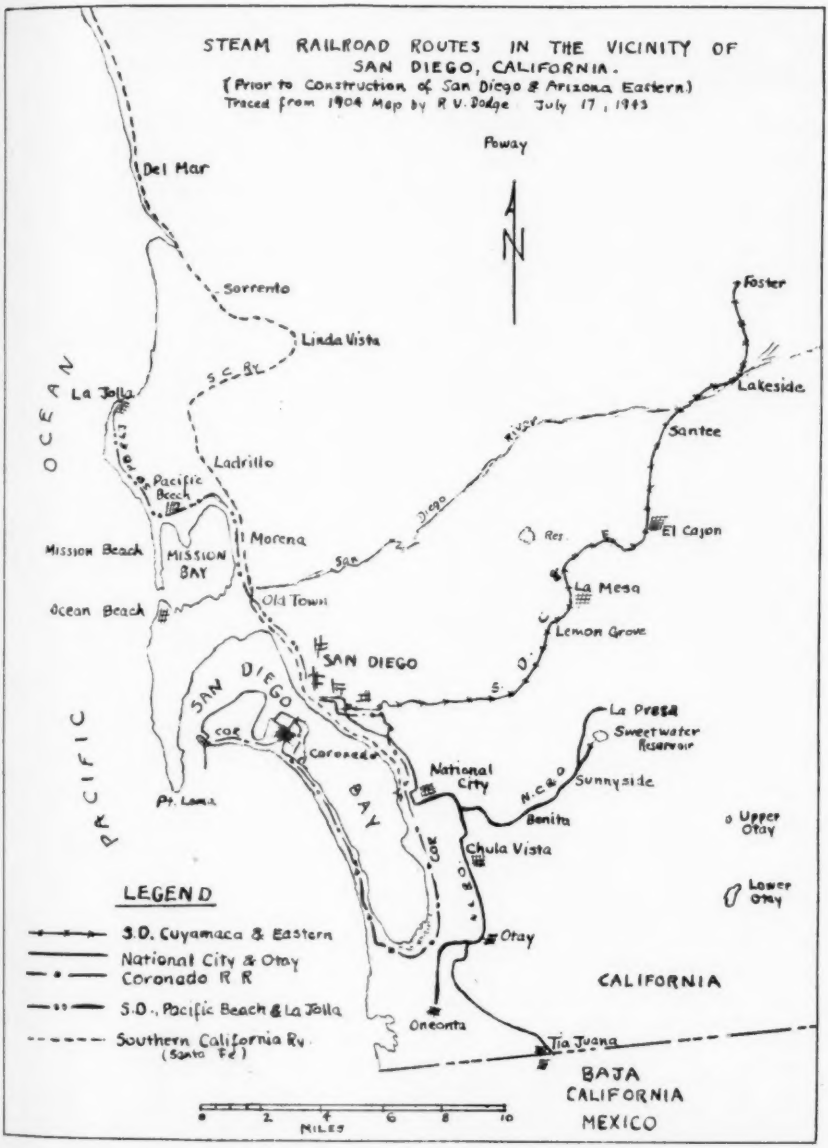
Courtesy of R. B. Jackson

Los Angeles & San Diego Beach No. 4, Rhode Island
Ex. N. Y. N. H. & H. at La Jolla, March, 1916.



Courtesy of R. P. Middlebrook

ELECTRIC RAPID TRANSIT No. 3 — Used on San Diego & Old Town for 10 days


STEAM RAILROAD ROUTES IN THE VICINITY OF SAN DIEGO, CALIFORNIA.
(Prior to Construction of San Diego & Arizona Eastern.)
Traced from 1904 Map by R.V. Dodge July 17, 1943
Poway
N
Del Mar
Sorrento
Linda Vista
Foster
Lakeside
Santee
El Cajon
Res.
La Mesa
Lemon Grove
La Presa
Sweetwater Reservoir
Sunnyside
National City
Bonita
Upper Otay
Lower Otay
Chula Vista
Otay
Oneonta
Tia Juana
CALIFORNIA
BAJA CALIFORNIA
MEXICO
OCEAN
PACIFIC
La Jolla
Ladrillo
Pacific Beach
Mission Beach
MISSION BAY
Ocean Beach
Morena
Old Town
SAN DIEGO
SAN DIEGO BAY
Coronado
Pt. Loma
LEGEND
S.D. Cuyamaca & Eastern
National City & Otay
Coronado R.R.
S.D., Pacific Beach & La Jolla
Southern California Ry. (Santa Fe)
0 2 4 6 8 10
MILES

8	0-4-0T	Rhode Is.		1878	Ex N. Y. Elevated No. 39 38-10x14. Wrecked and rebuilt. 12/1904. Scrapped 12/1906.
9	4-4-0	Rogers			No data on previous owners.. Was first numbered Coronado No. 13. Scrapped prior 1908.
10	0-4-4T	Baldwin		1894	Ex Chicago & Sou. Side Elev. Vauclain Comp. Scrapped 1908.
1	0-4-0	Baldwin		1880	Ex Northern Pacific. Sold to L. A. & S. D. B. No. 3, 1908.
1	2-4-2T	Porter	No. 3258	7/1905	Bought new. To San Diego Sou. No. 1 7/08.
2	0-4-2	Baldwin	No. 9043	1888	Ex S. D. O. T. & P. B. No. 2. Traded for Coronado No. 5. Rebit. to tender engine. Sold to L. A. & S. D. B. No. 2.

San Diego Southern

1	2-4-2T	Porter	No. 3258	7/1905	Ex Coronado 3rd No. 1. To SD&SE No. 1 — 1912.
2	2-4-2T	Porter	No. 4812	1911	Bought new. Numbered No. 100 by builder. Renumbered No. 2 on arrival. To SD&SE No. 2 — 1912.
3	0-4-2T	Porter	No. 876	10/1887	Ex NC&O No. 3 Sold prior 1912.
4	0-4-2T	Porter	No. 884	10/1887	Ex NC&O No. 4 To SD&SE No. 4—1912
5	0-4-2T	Porter	No. 905	10/1887	Ex NC&O No. 5 Sold prior 1912.
6	2-4-2T	Porter	No. 943	1/1888	Ex NC&O No. 6 To SD&SE No. 6—1912
7	0-6-2T	Porter	No. 945	1/1888	Ex NC&O No. 7 To SD&SE No. 7—1912
5	2-4-2T	Porter	No. 5111	1912	Bought new. To SD&SE No. 5—1912.

San Diego & Southeastern

1	2-4-2T	Porter	No. 3258	7/1905	Ex SDS No. 1—Cor. No. 1 Sold by 1916
2	2-4-2T	Porter	No. 4812	1911	Ex SDS No. 2—100. To SD&A No. 2—1917
3	No locomotive				
4	0-4-2T	Porter	No. 884	10/1887	Ex SDS No. 4—NC&O No. 4. scrapped by 1917
5	2-4-2T	Porter	No. 5111	1912	Ex SDS No. 5. To SD&A No. 5—1917
6	2-4-2T	Porter	No. 943	1/1888	Ex SDS No. 6—NC&O No. 6 Scrapped by 1917.
7	0-6-2T	Porter	No. 945	1/1888	Ex SDS No. 7—NC&O No. 7. Scrapped by 1917.
11	2-6-0	Porter	No. 1375	7/1892	Ex SD&C No. 1—SDC&E No. 1. Sold to City of Los Angeles, Terminal Island, 1918
14	4-4-0	Schenectady		1889	Ex SD&C No. 4—SDC&E No. 4—up?. Scrapped 1916.
15	4-4-0	Rhode Is	No. 941	1881	Ex SD&C No. 3—SDC&E No. 3—AT&SF No. 012—SC No. 3—CS No. 1. Sold to LA&SDB No. 15—1915

20	4-6-0	Cooke	No. 1029	1876	Ex SP 2011-1578-CP 213. Acq. 1/1911. Ran as SD&C No. 2011, 1911 to 1912. Sold to Sharp & Fellows Co. 1917. 57-18x24-93200-71500-150-17390.
21	4-6-0	Schen	No. 2470	1887	Ex SP 2115-1685-227. Acq. 7/1911. Ran as SD&C No. 2115 for five months. To SD&A No. 21—1917.
22	4-6-0	Rogers	No. 2883	1881	Ex SP 2112-1674-196. Acq. 8/1912. To SD&A No. 22 — 1917.
23	4-6-0	Pitts.	No. 52884	1912	Bought new. To SD&A No. 23 — 1917.
31	Motor	Gasoline—Mech. Pass. Hewitt-Ludlow Auto Co., San Francisco.			Scrapped
41	Motor	G. E. — Schen.			To SD&A No. 41
42	Motor	G. E. — Schen.			To SD&A No. 42
43	Motor	G. E. — Schen.	No. 3707		To SD&A No. 43 Ex BR&P

Electric Equipment

101	Comb. Coaches	Taken over by San Diego Electric. Sold to P. E. No. 410-1918
102 — 110	Coaches	Taken over by San Diego Electric. Sold to P. E. No. 411-419
111	Comb. Coach.	Destroyed in 1916 flood.

Note; Coaches No. 108-110 were renumbered No. 400-402 on the Point Loma Ry. before sale to Pacific Electric in 1918.

San Diego & Arizona

San Diego & Arizona Eastern

1	S-23	0-6-0	Pittsburg	No. 46689	1909	First engine on road. In service
2		2-4-2T	Porter		1911	Ex SD&SE 2—SDS 2—100. Sold US Navy Destroyer Base, San Diego. 1921
2	S-1	0-6-0	Schen.	No. 4138	1893	Ex SP 1046. Acq. 10/1921 Scr. 9/40
3	S-5	0-6-0	Baldwin	No. 20900	1902	Ex SP 1096. Returned to SP 10/40
5		2-4-2T	Porter	No. 5111	1912	Ex SD&SE 5—SDS 5. Sold to Mojave Northern No. 4. Scrapped 1940.
10	T-12	4-6-0	Schen.	No. 2470	1887	Ex SD&A 21—SD&SE 21—SP 2115-1685-227. Scrapped 11/15/1938
11	T-13	4-6-0	Rogers	No. 2883	1881	Ex SD&A 22—SD&SE 22—SP 2112-1674-196. Scrapped 12/1925
12	T-56	4-6-0	Pittsburg	No. 52884	1912	Ex SD&A 23-SD&SE 23. Scrapped 10-31-47
20	T-57	4-6-0	Baldwin	No. 29727	1906	Ex Bullfrog—Goldfield No. 12-14. Reboilered SP Co., L. A. 1919 Renumb. SP No. 2385 6/19/41. Returned to SD&AE 4/24/43. In service.
24	T-58	4-6-0	Baldwin	No. 31093	1907	Ex L. V. & T. No. 7 Scrapped 9/1940
25	T-58	4-6-0	Baldwin	No. 32250	1907	Ex L. V. & T. No. 9. Scrapped 9/1940
26	T-58	4-6-0	Baldwin	No. 32251	1907	Ex L. V. & T. No. 10. Renumbered S. P. No. 2386 6/20/41.

27	T-58	4-6-0	Baldwin	No. 32360	1907	Ex L. V. & T. No. 11. In service
50	C-30	2-8-0	Baldwin	No. 35953	1911	In service
101	C-31	2-8-0	Schen.	No. 54664	1914	Renumbered S. P. No. 2837—1918. Returned in 1919. In service
102	C-31	2-8-0	Schen.	No. 54973	1914	Renumbered S. P. No. 2838—1918. Returned in 1919. In service.
103	C-9	2-8-0	Baldwin	No. 31453	1907	Ex SP No. 2523. Acq. 1918. Returned to S. P. 5/1941.
104	C-8	2-8-0	Baldwin	No. 23899	1904	Ex SP No. 2720. Acq. 1918. Returned to S. P. 5/1941.
105	C-10	2-8-0	S.P. Co., L.A.	No. 1	1917	Ex SP No. 2843. Acq. 1918. In service
106	C-10	2-8-0	S.P. Co., L.A.	No. 3	1918	Ex SP No. 2844. Acq. 1918. Returned to S. P. 5/1941.
515	M-9	2-6-0	Baldwin	No. 33817	1909	Ex SPdeM 515—AE 575—CRY&P 515. Acq. 1918. Returned to SPdeM 1919.
Nos. 41-43, Motors ex SD&SE Nos. 41-43						Scrapped in 1939 and 1940.

Mechanical data of SD&AE Locomotives

S—1	51—18x24—91800—91800—140—18150	Engine No.	2
S—5	57—19x26—130000—130000—180—25190		3
S—23	51—18x24—98500—98500—175—22700		1
T—12	57—18x24—97600—73400—160—18550		10
T—13	57—18x24—85800—65600—165—19050		11
T—56	57—18x24—123400—87000—170—19700		12
T—57	63—21x28—162000—135000—190—31650		20
T—58	63—21x26—188300—140000—200—30940		24— 27
C—8	57—22x30—216700—191900—210—45470		104
C—9	57—22x30—218000—193700—210—45470		103
C—10	Same as C—9		105—106
C—30	50—20x24—137000—122000—180—29400		50
C—31	57—22x30—224000—210000—210—45470		101—102
M—9	63—21x28—189000—153000—200—33320		515

San Diego, Old Town & Pacific Beach
San Diego, Pacific Beach & La Jolla
Los Angeles & San Diego Beach

SDPB&LJ

1	0-4-0T	Dummy	National Iron Wks, S. F. 9/1887.		Ex SDOT&PB No. 1. Disposal unknown.
2	0-4-2T	Dummy	Baldwin	No. 9043 1888	Bought new. Traded to Coronado RR for their No. 5.
3	0-4-2T	Dummy	Baldwin	No. 9160 1888	Bought new. Became LA&SDB No. 1.
2	0-4-0T		Rhode Is.	No. 719 1878	Ex Coronado RR No. 5—NY El. No. 34. Scrapped.

LA&SDB

1	0-4-2	Baldwin	No. 9160	1888	Ex SDPB&LJ No. 3. Scrapped 1918.
2	0-4-2	Baldwin	No. 9043	1888	Ex Coronado No. 2—SDPB&LJ No. 2. Sold 1918.
3	0-4-0	Baldwin		1880	Ex Coronado No. 1—NP?. Scrapped 1918
4	2-4-4	Rhode Is.		1892	Ex Holton I. T. Ry. No. 4—NYNH&H?. Scrapped in 1918.
15	4-4-0	Rhode Is.	No. 941	1881	Ex SD&SE 15—SD&C 3—SDC&E 3—AT&SF 012—SC 3—CS 1. Scrapped 1918.
1	Motor	McKeen Comb.			Scrapped prior 1918.
2	Motor	McKeen Comb.			Scrapped prior 1918.

1 Electric Combination

2 Electric Open coach

3 Electric California coach. Ex San Diego Electric No. 7

10 Electric closed coach Ex San Diego Electric No. 10

51 Gasoline Motor coach. Made from Mack Truck.

Montreal and Lachine Rail Road

1847 1947

By Robert R. Brown

Older residents of Lachine will recall with nostalgic memories the scene of bustling activity on the Lachine Wharf on summer evenings at the turn of the century. It was the favorite meeting place for summer visitors and as the exciting hour approached, small boys, of whom I was one, would gather in groups; alternately listening for the distant whistle of the approaching train and then scanning the broad expanse of Lake St. Louis to see which steamboat would arrive first. Would it be the "Sovereign" from the Ottawa River or would it be the "Corsican" from Toronto? It might even be the ancient "Hamilton", of the Bay of Quinte line; a boat as old as the Lachine Rail Road itself. Bluff-bowed propellers passed in and out of the canal at frequent intervals but, lacking the glamour of the big side wheel passenger boats, were unworthy of the attention of the youthful nautical experts. Finally the train came round the bend and came to a flourishing stop at the end of the wharf and then, while the passengers disembarked, there was a rush to inspect the glistening tank engine, resting after its fast run out from the city; a contented Cha-cha-cha belching up its tall, slim stack. The dignified old engineer would get down and poke his long spouted oil can into the mysterious interior of the engine; usually he would smilingly notice his young admirers and some lucky lad would be permitted to hold the big oil can. Then the boats would arrive, one-by-one, and, while the tourists embarked, the boats would be critically examined and compared. The big golden crown on the paddle boxes of the "Sovereign" always aroused great interest. Indulgent parents usually would wait for "just one more boat" and then, walking reluctantly homeward to a belated supper, the boys would argue heatedly whether they would rather be engineer of the Lachine Boat Train or be captain of one of the big river steamboats. It was a difficult choice! The heyday of steamboating came to an end about 1912 and, although many of the boats struggled on for a few years, the depression of the early thirties put an end to that interesting phase in the history of Canadian transportation.

During the early years of the nineteenth century, two of the busiest highways on the island of Montreal were the Lower and Upper Lachine Roads. The former is now appropriately named LaSalle Blvd., but the latter has lost its identity in such meaningless names as St. James St., Western Ave., and St. Joseph St. Before the building of the Lachine Canal, all freight for Upper Canada and the Ottawa valley had to be carted out the comparatively level Lower Lachine Road, through what

is now Point St. Charles and Verdun, to the head of the Lachine Rapids where there was a small harbour known as the King's Post, traces of which are still visible at the foot of Fraser's Hill near the seven mile stone and a few yards west of the intake of the Montreal aqueduct. Passengers generally preferred the more scenic Upper Lachine Road and stage coaches began running between Montreal and Lachine at an early date. This route was out Notre Dame St. West (it was St. Joseph St. then) to Place St. Henri, then out what is now St. James St., and along the heights of Coteau St. Pierre, overlooking the long narrow Lac a la Loutre and the fine farms on the opposite hills in Ville LaSalle, then down Blue Bonnet Hill to St. Pierre aux Liens and to Lachine. There were numerous taverns along this road where coach passengers could stop for liquid refreshment and one of them, at the foot of the hill between Montreal West and Ville St. Pierre, was kept by a Scotchman who had for a sign a picture of a highlander wearing a blue bonnet. Thus the name Blue Bonnet was given to the inn, to the village, to the hill and, later on, to a near by race track. When the race track was moved to St. Laurent, many years later the name was transplanted too. Sixty or seventy years ago, tales were told by old-timers in Lachine how habitants returning from market in Montreal would return home and tell how they had been waylaid and robbed of the money obtained in Montreal and the Upper Lachine Road began to have an undeserved reputation as a haunt of bandits. Probably the taverns proved too tempting and the money was spent there.

The Lachine Canal was opened in 1825 and this put an end to the inconvenience and expense of carting the freight out the Lower Lachine Road but passengers still found the pleasant drive out the well-built Upper Lachine Road preferable to the slow and tedious trip through the canal. Traffic increased greatly during the thirties, more and more steamboats appeared on the upper lakes and rivers and it soon became evident that a more efficient means of by-passing the Lachine Rapids would be necessary. The Champlain and St. Lawrence Railroad, between Laprairie and St. Johns, was opened in 1836 and, in spite of its primitive equipment, proved to be a great sucess and so all that was needed was a man with sufficient vision and means to build the Lachine railroad. This man was James G. Ferrier, one of those many canny Scots who came out to Canada as practically penniless youths and, by practicing those peculiarly Scottish virtues of thrift, energy, intergrity and close attention to business, became wealthy and honored members of their community. Mr. Ferrier was a prosperous hardware merchant, he became mayor of Montreal, Chancellor of McGill University; he was chairman of the Canadian Board of the Grand Trunk Railway, a Legislative Councillor of the old Province of Canada and was called to the Dominion Senate in 1867.

Apparently he first became interested in the idea of building a railway to Lachine in 1844 or early in 1845 and he requested the engineering firm of Kinmond, Hutton and Steele, of Dundee, Scotland, to send out a practical engineer who would be capable of making the necessary surveys and superintending the construction of the road. The position was offered

to Alexander Millar, the Locomotive Superintendent of the Dundee and Arbroath Railway; he was given only 24 hours to decide but the salary offered, 200 pounds, was a large one for those days and he left for the new world in the summer of 1845.

The preliminary surveys were made in the autumn of 1845 and, early in 1846, the Province of Canada granted a charter incorporating the Montreal and Lachine Rail Road to build a railway from Montreal to Lachine Wharf and to operate steamboats on the St. Lawrence and Ottawa Rivers. The authorized capital was 75,000 pounds. The route selected ran through a valley which seems to have been an ancient channel of the St. Lawrence River; the line was almost entirely straight and almost dead level but these important advantages were more than offset by the swampy nature of the ground, especially through St. Cunegonde and St. Henri where the little St. Peter River meandered and where long stretches of the track had to be built on piling and also because of a long expensive fill the entire length of shallow Lac a la Loutre which extended from about Cote St. Paul Road to the western end of Ville St. Pierre and the site of which is now largely occupied by the Turcot freight yard of the Canadian National Railways. Thousands of loads of earth and rock were needed to build up the railway embankment and most of this was taken from the Lachine Canal, then being rebuilt and enlarged. Evidence of the amount of filling needed was shown by the recent discovery, beside the Canadian National Railways' Fruit Warehouse near Guy St., of a portion of the original right-of-way fence buried six feet below the present ground level! There is a tradition that, during the construction of the railroad, two locomotives, brought out from Scotland, fell into the swamp and were lost. This may have been true but more likely the story is a distortion of the actual loss of two locomotives near Turcot about ten years later; one belonging to the Montreal and Lachine Rail Road and the other to the Grand Trunk Railway.

The Montreal terminus was sometimes known as the Griffintown station but its correct name was taken from the adjacent Bonaventure St., now St. James St. Seven and a half miles to the west the line terminated on a steamboat wharf, opposite 21st Ave., where the Iroquois Yacht Club is now.

One locomotive was ordered from the United States and two locomotives, the rails and all other necessary equipment from Kinmond, Hutton and Steele of Dundee. The rails were received from Scotland in the autumn of 1847 but the two locomotives did not arrive until the spring of 1848.

Two interesting accounts describing the completion and opening of the line were published in the Montreal Witness:

November 8th 1847

"We are glad to see that the Montreal and Lachine Rail Road is rapidly approaching completion and is confidently expected to be opened in the last week of this month. The terminus at this end,

though not boasting of much architectural ornament, will be a very spacious and comfortable building. On Saturday (Nov. 6th) we saw the engine recently purchased in the United States; two others being ordered from England; moving in great state along St. Antoine St. to be set up and placed on the line. It weighs no less than seventeen tons and the boiler was drawn by eighteen horses!"

November 22nd 1847

"OPENING OF THE MONTREAL AND LACHINE RAIL ROAD"

"On Friday last (Nov. 19th) this important work was opened to the public, by the passage of a train of cars from Bonaventure Street Station to Lachine. The Directors have had no slight obstacles to overcome in their prosecution of their valuable enterprise, but the work is at last completed; and it has been finished in a singularly short period. The short course of the Canadian summer has sufficed for the beginning, middle and the end of this industrial epic; and this result has been attained by the energetic co-operation of Messrs. Brown and Company, the contractors, with the Board of Directors. The train started about one o'clock with the president, the Hon. James G. Ferrier, a large number of shareholders and directors and their guests. Among these were His Excellency Lord Elgin, the Hon. Messrs. Daly, Sherwood, McGill, Papineau, Caley and Badgley and a numerous body of the most influential of our fellow citizens. There were eight cars, of all classes, attached to the engine and with this weight the speed attained was about twenty miles per hour, the entire distance being performed in twenty minutes. The shed at the Griffintown end of the line is a very large open building, amply sufficient for the intended purpose, and the Lachine terminus is upon a spacious wharf abutting upon the river and intended to afford moorage for steamers, which will, no doubt, land and embark, at that place, numerous passengers departing for or arriving from Upper Canada and the United States. Owing to the manner in which the rails are laid and the superior condition of the springs, the hangings and the buffers of the cars, the motion on this road is of a peculiarly smooth and equable character. The inside fittings are precisely on the English plan; the first class cars are furnished in a luxurious manner with satin hangings, the softest cushions and silk blinds. The second class are substancial with comfortable leather seats and windows to protect the inmates against the inclemency of the weather. The third class are open. After the trip to and from Lachine, the company adjourned to Donegana's Hotel, where the directors had provided for their guests a very handsome and substantial lunch."

The cars were built in Montreal, probably by Ward Brothers' Eagle Foundry which had already built a number of cars for the Champlain and St. Lawrence Railroad.

The American locomotive, mentioned in the Witness, was a small 4-4-0 type engine, built by Norris Brothers of Philadelphia, and was named the "Lachine". It soon disappeared from the Lachine Rail Road and for a long time it was thought that this was one of the engines lost in the Turcot swamp but a review of the available evidence seems to point to a different solution of the problem. According to Mr. E. J. W. Pangborn, of Colton, Cal., grandson of the first locomotive engineer in Canada, the Montreal and Lachine Rail Road sold a locomotive in 1848 to the Champlain and St. Lawrence Railroad because the Lachine road found it unsuitable for its service. The records of the Champlain and St. Lawrence Railroad list a small 4-4-0 type locomotive, named the "Champlain", built in 1847 by Norris of Philadelphia and it seems reasonable to suppose that the "Champlain" and the "Lachine" were one and the same engine.

Two Scotch engines, the "Montreal" and the "James G. Ferrier", came out to Canada early in 1848 and were accompanied by Mr. W. L. Kinmond, a nephew of the senior partner of the Dundee firm. Four years later, he opened a locomotive factory, where the Bonaventure Freight Office is now, and there he built one locomotive for the Carillon and Grenville Railway and twelve for the Grand Trunk Railway. It was one of these that the Grand Trunk lost in the Turcot swamp in 1855. Later, he became a hardware merchant and, many years after the event he wrote an account of the first trial trip of one of the Scotch locomotives:

"We had three coaches on the road behind the engine when we opened the railway formally. In these were the directors of the railway company; but we enjoyed no very comfortable day. Besides the directors there were three United States engineers with us on the train to see what the Scotch engines could do. We started and you never saw the like. The directors were bumped up, shoved to this side and then to the other. One moment their high hats almost went through the roof, the next the wearer would be plumped down upon the seat and before he could think twice about it he would be knocked against the side of the car. They bobbed around in most undignified fashion. I was in a state of great anxiety. Millar had taken the bit in his teeth and was determined to show the directors what the Scotch engines could do. There was one of my uncles' managers in the coach and he was sent with his hat through the roof, with no other injury except a shaking up and a broken hat. Where our engines went, we would go. We had eleven minutes of this speed, and then we were at Lachine; eight miles in eleven minutes. The directors were furious. The feat achieved was extraordinary but they were half dead with shaking and fear of an upset. They had no mind for more experiments of this kind. Unless we both promised to go more slowly they would ride back to Montreal in post-chaises, which a man was sent to hire. Well we promised enough. Sandy Millar gave his promise—with a wink, however. He got up on the engine, but would not allow me to follow. He had an excuse that he wanted plenty of room. Finally, he said with some good strong Scotch words: 'These direc-

tors will find out now that this is a Scotch engine and that we can go even at a quicker rate. We will show them what we can do, now when we have them. Get up in the third coach. If there is anyone's neck to be broken, let it be mine. You are not coming up here.' Well, without any more ado we started, and we flew back to Montreal in nine minutes — that is, nearly a mile a minute. If the directors were startled with the speed shown when they went out in eleven minutes, you may be sure they were none the less when they came back in less time by two minutes. The president came to me very much ruffled and told me that he was going to fire Millar first thing in the morning. I said nothing because I could make no objection. But soon they had recovered their breath, and their common sense came uppermost. Most of them and the shareholders too, were Scotchmen. They did not discharge Sandy Millar but asked him to become general manager of the road. That was his triumph and of course ours too."

The two Scotch locomotives "James G. Ferrier" and "Montreal" were 2-2-2 type, with 14 x 20 cylinders and 72" drivers. They could not pull much weight but in passenger service on a level track they could travel much faster than was considered safe or necessary. They were soon changed to 4-4-0 type with 66" drivers. One of them, probably the "Montreal", was renamed "Lady Molson" and sold in 1872 to the Hamilton and Lake Erie Railway where it was given the name "Lucy Turner". In 1876 it went to the Hamilton and North Western Railway as no. 5, the "Erie", and in 1880 it was sold to a lumber company in northern Ontario. The "James G. Ferrier" must have been the engine which the Lachine Rail Road lost in the Turcot swamp in 1856.

The English style compartment cars, which were in use from 1847 to about 1874, were not popular. The doors were always locked before the train left the station and passengers feared the possible consequences of a wreck, and women objected to traveling in a compartment with strangers. A reckless engine driver named Patrick Kelly, acquired such a reputation for fast driving that many travellers refused to ride on the trains and continued to patronize the stage coaches, which competed successfully with the railroad for many years. Kelly was killed in 1873 when his engine, the "Hemingford", exploded while standing on a siding near the Mountain St. crossing.

Where the railroad crossed the Upper Lachine Road at the western end of Ville St. Pierre (there is an overhead bridge now), there was a level crossing protected by heavy gates which were swung across the track when there was no train in sight and it was the duty of a watchman, named O'Reilly, to listen for the engines whistle and swing the gates from across the track to across the road thus allowing the train to pass through and at the same time blocking traffic on the road. O'Reilly frequently fell asleep on a chair at the door of his cabin and failed to do his duty and, when this happened, engineer Kelly would stop his train as close to the crossing as possible, descend and then kick the chair

out from under O'Reilly. The resulting exchange of abuse and profanity was picturesque to say the least and was greatly enjoyed by most of the passengers. For many years this was known as O'Reilly's Crossing but later on, when suburban traffic became heavy, a station was built there and given the name Rockfield. Some years ago the station building was moved to the roadside and now serves as a garage and gas station.

The Lachine Rail Road has always been of great interest to numismatists because of the metallic tickets used. The third class passengers consisted of immigrants, lumbermen, Indians and, for a few years, workmen on the Lachine Canal and it was thought that paper tickets would be unsuitable and so a supply of copper tokens was ordered from Birmingham, England. They were sold to passengers at the stations and then lifted by the conductor who carried them strung on a piece of wire. They were about the size of a Fifty Cents piece and had a round hole in the centre; on one side was a picture of an old Planet type locomotive and the inscription "Montreal and Lachine Railroad Company"; and on the other side a picture of a beaver and the words "Third Class". They are quite rare now as the balance remaining in the hands of the railroad were melted at St. Lambert in September 1862, thus leaving a comparatively small number in the hands of collectors.

The directors of the company soon found that the railroad could not operate profitably with only the summer passenger traffic as a source of revenue; no dividends were ever paid and by 1850 shares were selling at a discount of 75%. The Champlain and St. Lawrence Railroad, however, as a link in a chain of international transportation, had been very profitable and on August 10th 1850 was given statutory authority to extend southward from St. Johns to Rouses Point, connecting there with the Northern Railroad to Ogdensburgh and points on Lake Ontario, and with the Vermont and Canada Railroad with connections to Boston and New York and also to move its northern terminus from Laprairie to St. Lambert, directly opposite Montreal. These developments prompted the directors of the Lachine Rail Road to plan similar expansion. Three years earlier, on June 24th 1847, a charter had been granted incorporating the Lake St. Louis and Province Line Railway to build from Caughnawaga, opposite Lachine, to the boundry near Hemmingford. This project lay dormant for a time but on August 10th 1850, the same day that the Champlain and St. Lawrence Railroad was authorized to extend its lines, the Montreal and Lachine Rail Road and the Lake St. Louis and Province Line Railway were united under the name Montreal and New York Railroad. The new company could build from Caughnawaga to the boundary but could not build one inch beyond, so the directors journeyed to Plattsburgh and on April 4th 1851 signed an agreement with some of the prominent citizens of that town providing for the construction of a railroad from Plattsburgh to the boundary where connection would be made with the Montreal and New York Railroad.

Construction of the Caughnawaga Division started in July and a small locomotive, the "Soughegan", was bought to haul the work trains. Originally it was a 4-2-0 type, with wooden frame, built in 1842 by

Hinkley of Boston for the Concord Railroad but soon rebuilt as a 4-4-0 type. During the sixties it ran on the Lachine Division and because it had a leaky throttle and often started itself, it was known as "Old Tearaway". Four new locomotives were ordered from the Amoskeag Manufacturing Company of Manchester, N. H.; the "New York" and the "Caughnawaga" for passenger service and the "St. Remi" and the "Hemmingford" for freight service.

On September 15th 1852, when the Plattsburgh and Montreal Railroad and the Caughnawaga Division of the Montreal and New York Railroad were nearing completion, a new agreement was signed by the two companies providing for the joint operation of through service between Montreal and Plattsburgh, and five days later, on September 20th, regular service was inaugurated. Southern connections were provided by the boats of the Champlain Transportation Company, which had been bought a month earlier by the Rutland and Burlington Railroad, and also by that railroad from Burlington to Boston and New York. A car ferry steamboat, named the "Iroquois", was ordered from A. Cantin and it commenced running between Lachine and Caughnawaga early in 1853. It could carry a locomotive and three cars and permitted the running of cars from Bonaventure Street Station through to Plattsburgh and to Ogdensburgh. The "Iroquois" was 147 feet long, 33 feet wide, had a beam engine of 216 h. p. and side wheels and it continued in service for about fourteen years. It was the first car ferry in Canada and its use was probably suggested by the floating bridge at Rouses Point. It was also noteworthy as being the only ferry boat in Canada to operate, without interruption, all through the winter. Apparently the Champlain Transportation Company did not give adequate service between Plattsburgh and Burlington, so on June 24th 1853 Mr. William F. Coffin, who had succeeded Mr. Ferrier as president of the Montreal and New York Railroad, bought the steamer "Francis Saltus"; a purchase which soon involved its new owners in some sensational international litigation.

For many years, the Montreal and New York Railorad operated five trains daily each way between Montreal and Lachine and one ran through to and from Plattsburgh. The Lachine Division was very busy during the summer months, when from ten to fifteen steamboats docked at Lachine Wharf every afternoon before descending the Lachine Rapids, but in winter, traffic on the railroad was very light. The Caughnawaga Division was never a success and in winter, when Lake Champlain was frozen over, it was cut off entirely from its southern connections. There was a physical connection over the Northern Railroad, from Mooers to Rouses Point; the Vermont and Canada Railroad, from Rouses Point to Essex Jct.; and the Vermont Central Railroad from Essex Jct., to Boston and New York but the Vermont and Canada Railroad and the Vermont Central Railroad had already established friendly relations with the Champlain and St. Lawrence Railroad; operating through trains to St. Lambert; and they obstructed in every way possible the rival Montreal and New York—Plattsburgh and Montreal — Rutland and Burlington route.

The Champlain and St. Lawrence Railroad, having just been extended at great expense, was also in financial difficulties and both companies suffered severely from the cut-throat competition. To put an end to this, in the autumn of 1853, several of the principal shareholders in the Montreal and New York Railroad bought a controlling interest in the Champlain and St. Lawrence Railorad after which competition stopped, traffic was divided and negotations were started to amalgamate the two companies. This union was not completed until February 14th 1857 when the shareholders of the two companies met, ratified the terms of amalgamation and re-organization and elected two identical boards of directors. A month later, on March 27th, the Province of Canada granted a charter incorporating the Montreal and Champlain Railroad to acquire the Montreal and New York Railroad and the Champlain and St. Lawrence Railroad. It was generally believed, probably with good reason, that the Caughawaga Division would be abandoned and this was expressly forbidden in the charter of the new company. The Montreal and Champlain Railroad commenced its career during the great depression of 1857 and the directors were unable to effect the proposed re-organization of the company's finances. They struggled on for six years and then they leased their property to the Grand Trunk Railway.

The main line of the Grand Trunk started from its eastern terminus at Portland, Maine; entered Montreal by the Victoria Bridge, then ran west through Point St. Charles and St. Henri to the old line which passed in the rear of Ville St. Pierre and Lachine. The Montreal station was located at the foot of St. Etienne St. (now Bridge St.), about where the present Bridge St. station is now. Passenger and freight shippers found this very inconvenient and, as early as 1860, the Montreal City Council was active in trying to help the Grand Trunk find a more satisfactory site for its Montreal station; several plans were considered and a start was actually made on a terminus at the foot of McGill Street but the lease of the Montreal and Champlain Railroad provided a simple and satisfactory solution of the problem. A connecting curve was built at the Tanneries (St. Henri); a third rail, to accommodate the broad gauge rolling stock of the Grand Trunk Railway, was laid down from Tanneries Jct., to Bonaventure Street Station and the Grand Trunk trains began using the Bonaventure Street Station on September 25th 1863. Nine months later, a third rail was laid from Tanneries Jct., across Victoria Bridge, to St. Lambert, where a similar connecting curve was built from the high level Grand Trunk Line to the low level Champlain Division of the Montreal and Champlain Railroad and, on July 1st 1864, the standard gauge trains of the Montreal and Champlain Railroad and the Vermont Central Railroad commenced running across the bridge and in to Bonaventure Street Station.

Extensive freight handling facilities were built between the Bonaventure Street Station and Notre Dame Street and when the freight sheds were built in 1864 there was considerable interest in the contractor; an American named Sherman and a brother of the famous Civil War general.

Because of the difference in gauge, the Montreal and Champlain Railroad was operated almost as a separate and independent road but in 1873, when the Grand Trunk Railway began changing to standard gauge, the Montreal and Champlain Railroad was purchased and absorbed into the larger system.

The Lachine Canal was again rebuilt and enlarged in 1875 and two long breakwaters were built out into the lake end, as these extended some distance beyond the railroad wharf, it was very inconvenient for the rapids steamers stopping to pick up passengers. To remedy this, the old wharf was abandoned and the railway extended half a mile further west to a new wharf at 33rd Ave. This wharf still exists, the rails are still down but passenger service was discontinued many years ago and the station building was demolished about 1936. Traces of the old wye, used to turn the engines, may still be seen between Notre Dame Street and the Canadian National tracks.

Considerable suburban traffic developed after about 1880 and stations were opened at St. Cunegonde, St. Henri, Montreal West, Rockfield, Dominion and Convent and in 1881 the Grand Trunk Railway built the Lachine and Pointe Claire Loop Line from near Lachine Wharf to a connection with the old line at Dorval and since then the old Montreal and Lachine Rail Road has been part of the main line of the Grand Trunk Railway and its successor the Canadian National Railways. This arrangement has continued to the present day except that, since the opening of the new Central Station, the part between Bonaventure Station and St. Henri has been used only by suburban trains and until recently by troop trains. Freight movements over this part of the line, of course, continue as in the past.

EDITOR'S NOTE:

While Bulletin No. 70 was in the final stages of binding and distribution, a note from the author of the article on the St. Lawrence & Industrie Village Ry. was received to the effect that he had erred in the use of the name of Dr. Sabourin of Lanoraie and in its place the name of Dr. Ferland should appear. I'm sure that our members will welcome this correction.

A. & G. W. Rail Road of Penn'a.

TREASURER'S OFFICE.

Meadville Dec' 5 1863

$ 250 4

Received of Daniel Sharpeck Esq five Hundred fifty 4/100

Dollars, ($ 250 4) in full of his subscription to this Company for

Machine Shops, for which has been given

him five hundred Dollars in Bonds

and the Share of Stock

Wm Thorp

Treasurer.

Courtesy of Erie R. R. Co.

Receipt given for subscription for the machine shops to be built at Meadville.

A. & G. W. Rail Road of Penn'a.

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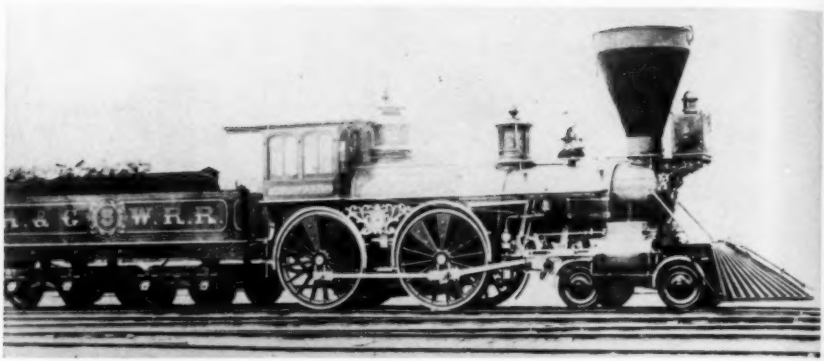

Courtesy of C. E. Fisher

A. & G. W. No. 5 Danforth & Cooke, 1861 — First locomotive to arrive at Meadville, Pa.

Courtesy of Erie R. R. Co.

Second station erected at Salamanca, N. Y., demolished in 1904.
Wells Fargo office was at the right hand end.

er
Pa.

Courtesy of Erie R. R. Co.

A. & G. W. R. R. Station at Meadville, Pa., 1864

Courtesy of Erie R. R. Co.

BROAD GAUGE DAYS ON THE ERIE

Celebrating the opening in the early 60's of the old Atlantic & Great Western Station at Meadville, Pa., and the adjoining McHenry House, the most celebrated hotel in its day between New York & Chicago. After the A & G W became the Erie much of the six-foot wide gauge was changed to present day standard gauge. Note the Dolly Varden stack on the engine which hauled the first westbound train to arrive at Meadville Nov. 18, 1863.

Atlantic and Great Western

A STUDY IN VALUES

By: EDWARD HUNGERFORD

Adapted for the BULLETIN *of the Railway & Locomotive Historical Society, Inc. from Edward Hungerford's book,* MEN OF ERIE, *with the permission of the Publisher, Random House, and of the Erie Railroad Company.*

As the name would indicate, the Atlantic and Great Western Railway was an ambitious enterprise. Even though its rails never came within three hundred miles of salt water and never reached farther west than Dayton, Ohio, which, as every schoolboy knows, was nowhere near the Great West. But, like its foster mother, the New York and Erie, the Atlantic and Great Western was vastly ambitious. Cast in heroic mood and destined finally to become something considerably less than heroic, the road, stringing its weary way across southwestern New York, northwestern Pennsylvania and Ohio, eventually was to prove itself a carrier of real merit. The only large American railroad to be built in the stirring days of the Civil War, it went through many vicissitudes finally to emerge as a vital link in an important trunk-line connecting New York and Chicago — the present-day Erie — with a splendid reputation for commerical efficiency.

Built by capital raised in England and expended profligately in the United States, the Atlantic and Great Western went through all the money-mad phases of the 'sixties and the 'seventies. Something like a hundred million dollars was expended to build a railroad worth at that time not more than ten million. Money was scattered right and left.

The Atlantic and Great Western began as three separate railroads, centering respectively about Jamestown, N. Y., Meadville, Pa., and Franklin, Ohio. These three different roads, the Erie and New York City, in New York, the Branch, or Meadville Railroad in Pennsylvania, and the Franklin and Warren in Ohio, at the outset met their own problems, in their own various ways. Each of the men who brought them into being faced almost insuperable difficulties of many sorts, but each of them gradually conquered his own problem.

The first of these roads to be charted and organized was the Franklin and Warren. Its progenitor was Marvin Kent, of Franklin, Ohio, a pioneer industrialist in Ohio, and he was truly to be called an outstanding man.

Kent, in his small home town, had hankered for a rail connection with the outer world. When the early Cleveland and Pittsburgh Railroad now a part of the Pennsylvania, passed by Franklin (now Kent) in favor of nearby Ravenna, Kent's good nature came almost to the breaking point. He was not a man to be thwarted. By 1850 he had a glass works, a woolen mill, and a flour mill in Franklin, and he was about to erect

a cotton factory there by the falls of the Cuyahoga. He had the town renamed for himself and that name has stuck.

What is the use, asked Marvin Kent, for me to build these mills, if I can have no railroad connection with the outer world, no way of reaching its markets? He thought the matter out carefully and presently a bill was introduced at the state capitol at Columbus for a road to run east from Franklin, through Warren to the Pennsylvania state line, west as far as Akron, and ultimately down into the far southwestern corner of Ohio.

This was the line which at first was known as the Coal Hill Road. At the outset Kent realized the necessity of a good deal of secrecy as to his railroad plans. Active and unscrupulous rivals already were in the field. It was not tactful, to put it mildly, to talk of building another railroad all the way across the state of Ohio. So the name of Kent's new line cautiously was changed to the Franklin and Warren, which was granted a charter by the Ohio Legislature on March 10, 1851. The road was organized at once, $900,000 was raised in stock subscriptions, and on July 4, 1853, at the bank of the Cuyahoga in his home town, Kent turned the first shovelful of earth for the construction of the road. Seven days later, Henry Doolittle, of Dayton, received the contracts for grading the road all the way through Ohio, down to Dayton where it would make connection for Cincinnati over the new Cincinnati, Hamilton and Dayton road. Another hundred thousand dollars was added to the subscription and Doolittle soon had forty-five per cent of the grading completed. Then came a mighty slump in the money markets all the way across the land, severe drought was added to calamity, and for some years no more work was done on the Ohio road. During this time the name of the nascent enterprise was changed to the Atlantic and Great Western Railroad (of Ohio) with Marvin Kent as its first president. Slowly a real idea was being born.

The Franklin and Warren Railroad had the power to proceed from Franklin to any point within the state. It might go all over the southwestern portion of the state, if the directors saw fit, and connect with any other road. A road of any width might be constructed. This was one of the last charters granted under the old constitution of Ohio; the new constitution required personal liability and other limiting clauses. Organization under the new constitution was subject to the will or caprice of any future legislature. Under the charter of the Franklin and Warren Company the franchise was special and could not be disturbed and no individual liability could exist. The capital stock authorized was two million dollars. There was no limit to the terms of its corporate existence. *History of the Atlantic and Great Western Railroad*, by Paul E. Felton.

Marvin Kent's road, with an intermediate link through Pennsylvania, was planned to connect in some way with a new road in New York State, which, in turn, would connect at Great Valley with the much-heralded New York and Erie, as yet not completed through to Lake Erie. This York State company, easternmost link of the ambitious Atlantic and Great Western plan, was chartered in 1850, as the Erie and New York City railroad, and it had its chief support from the village of Jamestown, at the head of Chautauqua Lake, which was much aggrieved that it had been left out of the line of march of the original New York and Erie.

But the most interesting and the most difficult link was the middle one that would reach across the state of Pennsylvania to connect the Ohio and the New York Great Westerns. It had its inception and its prime force in the ancient town of Meadville, on the upper reaches of the French Creek. Meadville was one of the very oldest settlements in northwestern Pennsylvania, the seat of the ambitious young Allegheny College, as well as of the first bank in that part of the state. It already was a manufacturing town of considerable importance. Meadville yearned for larger things and the chief of these was a railroad.

In the autumn of 1851, Judge Kinsman, of Kinsman, Ohio, visited Meadville armed with a letter of introduction from Dr. D. Allen, also of that Ohio village. He called first upon John Reynolds, one of Meadville's leading citizens and presented a letter which read, in part, as follows:

"Permit me to intrude upon your time for a moment; Mr. F. Kinsman, of Warren, O., wishes me to write to some gentleman in your place on the subject of a railroad from near Jamestown, N. Y., through your place and west to Warren and Akron; a route originally projected by Mr. Clinton (DeWitt Clinton), of New York. I will mention a few arguments in favor of the route:

"It is said that the New York and Erie Company are not satisfied with their terminals at Dunkirk, also that the Lake Shore track west of Dunkirk is only four feet wide. Now the New Yorkers want to get as far west as possible. This route is a very desirable one in many respects. Your place, Warren, Ravenna and Akron are important points; at the two last, connections would be formed with important roads now commenced.

"Again, it is said that Pittsburgh wishes to reach Olean on the Allegheny; and that it is as near and a better route than any other to come down to Beaver thence up near Mercer, a little south of your place and so to Warren. Now if this is so, a road, west to Ohio and South to Pittsburgh might be obtained through Meadville. The road west would be THE ROAD.

Now do you wish such a road in Meadville? If you wish the road west, you will have to obtain it by a ruse, of Pennsylvania — the state will not give such a route directly to the New Yorkers. But under the plan of a road to Pittsburg, you can now obtain a charter. The subject is now discussed in Ohio and New York—and if such a charter is to be obtained, it ought to be this winter, before the plan becomes public. If you can obtain a charter, I believe the New Yorkers will build the road in five years.

"If the plan seems visionary to you, then please excuse me, if not, by all means act upon the subject this winter and obtain a charter. Being a stranger in Meadville, my father suggested yourself as a very suitable person to address.

Yours very respectfully,
D. ALLEN, M. C.

"Kinsman, Ohio, February 17, 1851."

Dr. Allen had hit it squarely upon a very troublous problem: the commonwealth of Pennsylvania held to a very quaint idea that all traffic that passed east from the Ohio country to the Atlantic seaboard should go the *full length of* Pennsylvania, from the headwaters of the Ohio to the bank of the Delaware; through Pittsburgh and Philadelphia, presumably over that fine new railroad that was just being completed over the mountains the full length of the state.

For about thirty miles between New York and Ohio, Pennsylvania touches the south shore of Lake Erie. The powers that ruled at Harrisburg preferred that this corridor should not be bridged by the rails of alien states. Rather would they have made a stone wall of it. This eventually was broken down.

How to get Meadville properly into the rapidly growing railroad picture was the problem that interested the citizens of that village, once Judge Kinsman had made his visit to them. They appreciated Dr. Allen's suggestion as to the need of greatest caution, lest Philadelphia and Harrisburgh should become aware of what they were attempting and nip the whole thing in the bud. It would need a ruse, and a clever one at that. Gradually a plan suggested itself.

There was at that moment a project afoot to build a railroad down the Ohio and up the valley of the Beaver River, from Pittsburgh through to the fine harbor of Erie. That project definitely was set to go through. If only Meadville could hitch itself onto that Pittsburgh and Erie plan, so thought Reynolds and his fellow citizens of the town, all would prosper thereby. In May 1852 a law was passed by the Pennsylvania Legislature, authorizing certain counties to subscribe to the newly chartered Pittsburgh and Erie Railroads, upon recommendation of the county grand juries. After some argument about the proper track gauges for the new lines. Crawford County, of which Meadville is the shire town, bonded itself for $200,000 for the new railroad, after which the line west of Meadville was at once located and some of the right-of-way purchased.

Identified with this project of the Branch Railroad was a smart young attorney of Meadville, one Cyrus K. Holliday, who afterwards went out to Kansas, promoted and became known as the "father" of the Atchison, Topeka and Santa Fe. Holliday had first assisted in drawing up the charter of the Pittsburgh and Erie Railroad, he then turned his attention to the promotion of the Meadville Branch, afterwards to become a part of Atlantic and Great Western. For his efforts on the Pittsburgh and Erie he was given $20,000 worth of bonds, and selling these, went out to Topeka, Kansas, and founded the Sante Fe property.

On August 19, 1853 ground for the Meadville Branch of the Pittsburgh and Erie was broken, amid oratory, the salvos of artillery, and the stirring music of the town's famous Sax Horn Band. This was followed a few days later by the signing of a contract for the building of the Branch, at a cost of $1,250,000. The Pittsburgh and Erie Company met at New Castle nine days afterward and formally accepted the subscription.

Thus the stage was seemingly neatly set. The Branch would be built to Meadville, then, cautiously, on east of there until finally the New York State line would be reached, while at the same time connection would be made with the Franklin and Warren road, to the west. It was a pretty plan and adroit and it seemed almost certain to go through.

But it did not go through then, nor for a long time thereafter. The same widespread financial slump that was catching Marvin Kent's road to the west was fastening its deadly fingers upon the Meadville railroad and William Reynolds, its first president. Subscriptions, easily made, were slowly paid. The new company could not collect by legal processes, for fear that ill-feelings would be aroused and prejudice created against the road. Reynolds and his father, John Reynolds, and their friend, Gaylord Church, another stout supporter of the project, more than once were compelled to resort to their personal funds to keep it alive. President William Reynolds appealed to President Homer Ramsdell of the New York and Erie for help, but all that Ramsdell would promise was that the New York and Erie would supply $150,000 when the Branch Railroad showed sufficient subscriptions to complete it all the way across Pennsylvania. This was no real help. The grading of the road west of the French Creek went on, but very slowly indeed. Then came the great drought and the complete failure of the crops, and the work came to a complete standstill. Meadville was in the dumps.

Active opposition to the Branch Railroad and the plan by which it had been financed showed itself. Eventually Crawford County repudiated the bonds it had issued for subscription to the stock, and a considerable scandal developed. But before that, antagonism had developed from another quarter.

The city of Erie thrust itself into the situation. It demanded the immediate completion of the Pittsburgh and Erie to its harbor. Erie became a hotbed of opposition and of rancor. It resented bitterly being completely by-passed by an east-and-west road thirty-five miles to the south through Meadville. Reynolds and his adherents replied in kind. They charged that the Pittsburgh and Erie had no real intention to build the Branch Railroad, but simply wanted to go through to Erie, which had not contributed or offered to contribute a dollar to the project. Then it was that Crawford County repudiated its bonds, mighty scandal arose, and the fat was in the fire. All work on the new road came to an abrupt end. The situation seemed helpless.

In Ohio events were more encouraging. Grading, from Franklin (Kent) east to Orangeville, was proceeding and on January 12, 1855, the Franklin and Warren changed its name to Atlantic and Great Western (of Ohio). At the same time it increased its capital stock from two million to four million dollars.

"The reason for urging immediate action was the rapid westward progress of other established railroad lines. The Baltimore and Ohio had extended its trunk westward to the interior of Ohio and by several connections with other roads within Ohio had penetrated into the plains of the Mississippi Valley. Under the same progressive extension policy the Pennsylvania Central had subscribed to the stock of several

different railroad companies and had endorsed the bonds of another. In addition, under the influence of Philadelphia capital, the Ohio and Indiana and the Fort Wayne and Chicago roads had consolidated with the Pennsylvania Central, making a grand route of uniform gauge from Chicago to Pittsburgh, a distance of 465 miles. Except for a bridge across the Allegheny at Pittsburgh, the line was complete to Philadelphia. The same restless energy on the part of the Pennsylvania caused the Baltimore and Ohio to start working its way in the direction of Cincinnati as well as of Chicago." *History of the Atlantic and Great Western Railroad,* by Felton.

Encouraged by this, William Reynolds and his fellows in Meadville were stirred by fresh hope. A. C. Morton, of New York, a former locating engineer on the Grand Trunk Railway, of Canada, wrote Reynolds suggesting an immediate union of the three rail enterprises into one Atlantic and Great Western. Reymolds liked the idea so well that he called in Meadville to plan definitely for a six-foot gauge Atlantic and Great Western which by connecting with other roads would go all the way through to Cincinnati and St. Louis. The prize to be contended for was the bulk of the traffic of the great Mississippi valley. Railroad enthusiasm in Meadville at once revived. The town fought for its own and this time it got it. Harrisburg saw the writing on the wall.

As a preliminary to a combination of the three Great Westerns, Governor James Pollock of Pennsylvania, on July 3, 1857, issued patents establishing the Meadville Railroad Company. And a few weeks later the Pittsburgh and Erie turned over to the Meadville Company all the property and rights of the former Branch Railroad.

Hardly had this action been taken before there came the repudiation of the county bonds, not alone those of Crawford County but of its immediate neighbors. The entire grandoise Atlantic and Great Western thus started out under the shadow of suspicion. It was forced to go far overseas to secure funds for its construction, and even in Europe the sale of securities of the new railroad was not helped.

Yet Europe at that time, especially England, was almost bursting with money. Industrial prosperity in Great Britian was at a high point. England was rich again. British capital was demanding new fields. Investment in American securities had begun as early as the canal era and the success of the Erie Canal across New York State was not lost upon Britishers. American railroads followed canals as rather fascinating opportunities for their investments. The Atlantic and Great Western had not come into the picture at too bad a time.

Negotations abroad for funds for the Atlantic and Great Western began in 1857 when A. C. Morton, C. L. Ward (another consulting engineer), and Henry Doolittle, the contractor, went to England. They secured many promises of funds but when they returned, the leader of the party, Morton, turned face and refused to reveal the details of their negotations unless he was awarded the contract for building the Atlantic and Great Western across Pennsylvania. He rode just a little too high. He lost not only the contract but also his post as consulting engineer for the road. Thereafter he became its most powerful and dangerous enemy.

The following year Ward and Doolittle returned to London with 1,150 of the bonds and $75,000 of the capital stock of the Atlantic and

Great Western in their carpet bags and almost at once made a successful sale of them. Also they met James McHenry, and the fate of Atlantic and Great Western was at once settled for good or for bad. On August 11, 1858, Doolittle signed a contract with McHenry, empowering him to act as the European agent and iron contractor for the new road. The latter sent his own engineer, Thomas W. Kennard, to America, to go over the route for the Atlantic and Great Western.

At this point James McHenry became the guiding spirit and driving force of the entire Atlantic and Great Western project from Salamanca (formerly Great Valley) to Dayton. He was a forceful and rich ironmonger who had located in England, and it was him that the men from Pennsylvania and Ohio went to ask for iron and for money. They got both. McHenry took the contract on such terms that eventually he was able to acquire control of the road. He had a way with him, that McHenry.

Having accepted the Atlantic and Great Western in far-away North America as a personal responsibity, he made the best of it.He brought in the Marquis of Salamanca, who already had achieved a fortune in the construction of new railroads in Spain, France, and Italy.

The close friendship between McHenry and Salamanca took many a curious turn. One such turn occurred after the so-called "Carlos Revolution" in Spain, when Queen Isabella was forced to abdicate and flee to London, the haven of all political refugees at that time. McHenry turned his elaborate house at Holland Park in the Kensington section of London over to the unfortunate queen. He did more. He plotted with Salamanca for the restoration of the Spanish monarchy. After three years of more or less chaos, the time was right for the return to the throne of the heir, who had been a military student at Woolwich in England. The restoration was planned carefully and the young Alphonse was sent on a ship to Barcelona where he was joyously received. He made his way overland to Madrid and was seated upon the throne, without a shot having been fired. Later the two men tried to do the same thing for the son of Napoleon III, also a student at Woolwich. The young Prince Imperial was sent into a minor war in South Africa, in order to give him a proper background for his return to France. This time the maneuver did not work. The young prince was shot in the back and killed. The Empress Eugenie remained a refugee in England and the French Empire came to an end.

It was in the honor of this Spanish Grandee that the little junction town of Great Valley upon the bank of the Allegheny, where the new Atlantic and Great Western made connection with the New York and Erie, was at once renamed Salamanca. In after years the *New York Herald* was to comment, "James McHenry was contractor, foster father, and finally came near being the funeral undertaker of the Atlantic and Great Western."

By the summer of 1861 the construction of the new road was proceeding from Salamanca to Jamestown and Corry. There had been considerable dispute as to the location of the new line between Jamestown

and the state line — two separate routes actually were laid down — but eventually this was all adjusted. Then the Civil War burst upon the country and many a cherished business plan went to dust. Money for anything except war purposes was practically unobtainable within the United States. Very well, said Marvin Kent and William Reynolds, we shall go overseas to McHenry for help. Presently they did just this, Kent sending his son along with Reynolds and Kennard. The trip apparently was successful. McHenry now was enthusiastic. Money was to be forthcoming immediately. It was at that time, however, that the British mail steamer *Trent* was seized by the doughty Commodore Wilkes, and relations between the United States and Europe, especially England, became much beclouded. McHenry's hands were tied and matters on the Atlantic and Great Western remained at a standstill for the better part of another year. It was not until November 11, 1862, that the first train from Salamanca rolled into Meadville.

James McHenry had planned to make a good deal out of Meadville, perhaps he even intended to create a really important city out of the pleasant little market town in the valley of the French Creek. At the outset he made Meadville the chief headquarters of Atlantic and Great Western (out of deference to Marvin Kent, a secondary headquarters was to be established in Kent). Accordingly, the locomotive shops of the new railroad were located there (the car shops were located at Kent) and a huge wooden passenger station erected on the island in the French Creek. It was the only station on the road with a covered train shed, and adjoining it there was built a large hotel which promptly was named the McHenry House. Meadville was elated. Good cause aplenty it had for elation.

High hopes accompanied the Atlantic and Great Western venture, once the dauntless McHenry had put his shoulder to the wheel. According to the *New York Herald* of February 6, 1870, visions of grasping the whole trade of the West, the Northwest, the Southwest floated before the fancy of the projectors. The *Herald* went on to say: "An immense force of men was placed upon the work, and it was hurried forward under the inspiring genius of McHenry at as rapid a pace as the Union Pacific. English capital was lavished upon it as capital was never lavished before. At Meadville a station was put up rivaling, in the style and beauty of its surroundings, any of those you may notice in the best railroads of England; charming cottages for the officers of the road, a park at the rear with winding walks, fir trees, roses and jessamine bushes. A hotel of over 100 rooms and a dining room as long as a train were a portion of the great enterprise. The region of flowing petroleum was tapped at the opportune moment, and by way of the line to Cleveland, the oil was carried to the refineries." You will readily admit that the visions of James McHenry and his confiding English friends were not too sanguine. How much more exalted might the British fancy have become had the two roads at the time been united in construction and management. The Erie stretched to the lakes through the great state of New York and lapped its branch lines around the richest coal beds of Pennsylvania,

while the Atlantic drew off the abundent riches of the oil region! The Atlantic and Great Western started off with really magnificent prospects. It opened up a new wonderfully rich region; it struck for the carrying trade of the mighty West; it infused a quickening growth into the old and fossilized towns and villages through which it passed, picking up an important local traffic and directing a fresh current of commerce toward the state of New York.

From the deep valleys and high hillsides of the wilderness in the north western corner of Pennsylvania was oozing a slimy new black fluid that was to transform the future of civilization. When Edwin L. Drake at Titusville, in 1859, drilled the first oil well, he was setting the foundations for almost countless fortunes, as well as for the transformation of transport, both on the ground and in the water and above and under them. Erie and its new stepchild, Atlantic and Great Western, ran almost into the heart of the oil country. A short and dubious branch, which the older road had purchased and which ran from Carrollton (just east of Salamanca) down to Bradford and beyond, almost overnight became a bonanza railroad. In 1864, amid panic and confusion, the Atlantic and Great Western built its branch from Meadville to Franklin twenty-two miles away, and two years later to Oil City.

It immediately became almost the most profitable portion of the system. Upon it and the Erie ran the first oil tank car ever operated upon any railroad. It consisted of two squat wooden vats resting on a flat car, and once these had been filled with the precious petroleum, the railroaders were fearful that they might leak and lose their contents before the car ever reached its destination. Upon its maiden trip telegrams were sent from each station that it passed, reporting the condition of the tanks. The car came through magnificently. Soon there were many others; in the meantime the present type of tank car with its longitudinal tank and dome being envolved.

So was a revolution being wrought.

Well could the Atlantic and Great Western afford to plunge into a huge terminal at Meadville. The enterprise for the moment had been made successful, pre-eminently successful. The retardation in its fortunes caused by the Civil War was more than balanced by the vast help given it by the swift development of the oil industry in northwestern Pennsylvania. Glowing reports of this newly found mineral wealth within the United States stimulated the overseas interest in Atlantic and Great Western. The farsighted William Reynolds saw to it that McHenry received generous samples of the new petroleum. As early as September 6, 1861, one finds him writing McHenry:

"We have secured the oil sent to the eastern market by rail from Union (City) and other points on the Sunbury and Erie Railroad, but, as stated in my last letter, a very large quantity is waggoned to and shipped from a point on the canal (Shaws Landing) five miles south of Meadville (two and onehalf miles from our line). This averages from 300 to 500 barrels per day, although on Monday reaching

1800. Our line if completed to Meadville would secure that now taken by canal and a large portion of that sent by river. The quantity now sent daily from the wells exceeds 2000 barrels and I am assured this does not exceed one-fourth part of the quantity actually yielded by the wells, the other three-fourths being stored in tanks in the ground awaiting better prices. Some wells have from 40 to 60 tanks full, averaging from 200 to 500 barrels. Owing to the present low prices, few of the pumping wells are in operation. You can therefore estimate the present capacity of the oil region if stimulated by advanced prices on those now ranging at from four to five cents per gallon at the well. It may, from eighteen months' experience, be safely estimated that this business is permanent and may enter into future estimates of the profits of the road. Each month has produced wells surpassing those previously drilled until many of those a year since considered a fortune are now regarded as small affairs. The yield of some of the late wells is truly wonderful, forcing from a depth of 600 feet from 200 to 800 barrels a day with such power as to throw the oil and water like a vast fountain to a greater height than the surrounding forest trees."

McHenry was well versed in the subtle art of publicity. He saw to it that the new marvel oil of the hills of Northwestern Pennsylvania were thoroughly publicized, with the result that no longer was there the least difficulty in selling the securities of Atlantic and Great Western. The Englishmen all but formed in queues to invest their pounds sterling in them. And all the while the traffic on the new railroad was rising to undreamed of heights. Bonanza days for Atlantic and Great Western were beginning.

A London Times article of August 29, 1861, reprinted by the Atlantic and Great Western for distribution, reported that 100 wells already in operation were yielding an average of 600 gallons a day, or 18,720,000 gallons a year. The number of barrels carried over the road from Corry to Salamanca between May and September of that year was close to 50,000.

Vast ideas of expansion filled the heads of its promoters. All this while Doolittle and his fellows pushed through the work of construction until June 20, 1864, when the first train from Salamanca entered Dayton, 369 miles distant. During the entire Civil War no other railroad in the United States was constructed as rapidly as the Atlantic and Great Western. The war intensified the problems of construction but it no longer lessened the confidence of European investors in the road.

From Dayton south to the Ohio River, Atlantic and Great Western trains went over the tracks of the Cincinnati, Hamilton and Dayton, which had been equipped with a third rail to accommodate the wide gauge. At Cincinnati there was direct connection with the broad-gauge track of the new Ohio and Mississippi, of which General George B. McClellan had become the guiding influence, through to St. Louis.

Cleveland was much closer at hand; In 1863 the Cleveland and

Mahoning Railroad, from Cleveland inland to Youngstown and Sharon, was leased by the Atlantic and Great Western. Arrangements were made at once to lay a third rail so that broad-gauge Erie trains could run upon it between Jersey City and Cleveland.

Here was one of the finest acquisitions ever made by Erie. Together with the Pittsburgh and Lake Erie, extending south from Youngstown, the Cleveland and Mahoning, which was completed in 1856, formed a through route from Cleveland to Pittsburgh. This route has continued through the years and steadily has gained in importance. Pittsburgh is one of the heavy tonnage centers of all America. Between it and Lake Erie there flows a northbound coal traffic and a southbound traffic of iron ore. In the season of navigation on the Great Lakes this assumes almost fantastic proportions, as in the summer of 1942, when not less than 92,000,000 tons of ore were brought down the Lakes from the rich district of the Mesabi at the head of Lake Superior to Cleveland and its adjacent ports.

When all apparently was well with Atlantic and Great Western, things began to happen.

In the fall of 1864, President Reynolds had severed his connection with the road. For twelve years he had labored for it faithfully and well, but the burden finally became too much. Reynolds had worked in close co-operation with McHenry, who most of the time was far away across the sea and sometimes even then rather difficult to handle. At times he must have been much puzzled. At no time might the pathway of Atlantic and Great Western be called easy. The faded minutes of the company show this all too readily.

Sometimes they went into detail, as when Dr. Samuel L'Hommedieu, who had succeeded Reynolds as president of the constantly harassed enterprise, was presented with a petition by the citizens of Meadville protesting against the nonobservance of the Sabbath both by the railroad and its employees. Later L'Hommedieu asked his board for permission to establish an eating house at West Salem, which was granted. Appartently, it was not too successful, for within a twelvemonth the president of Atlantic and Great Western asked for permission to place a three-thousand-dollar mortage upon it. Railroads in this country as a rule have not been too happy running hotels or restaurants. Even dining cars are a good deal of a problem to many of them. The McHenry House, chock-a-block with the covered station there at Meadville, was always a burden to Atlantic and Great Western. It was too big, and finally it was torn down. Before that it had been made free to its landlord and then that enterprising fellow had succeeded in inducing the board to pay his wife and him one hudred and fifty dollars a month as salary to run the place.

When they finally tore down the McHenry House (1891-2), along with the grimy old covered station, they found etched upon a window pane from a guest chamber, the signature of John Wilkes Booth. A good many other well-known people had stopped in the famous old hotel.

Among them was Horace Greeley who sent a dispatch to his *New York Tribune* saying that on the bill of fare he found four kinds of cold meat, five roasts, and an abundance of game.

Until 1868, the road continued its gay, mad course. Then came the awakening. Reynolds was out. And so was Marvin Kent. Both men were rigidly honest and no longer could they stomach the mad expenditures. Each had accomplished his chief purpose, which was giving his home town the rail service that it so much needed. Neither was willing to be party to any conspiracy to defraud the public, no matter on which side of the Atlantic it might be situated. They did not wish to repeat the carnival days of Daniel Drew and Jim Fisk.

Once again Eleazor Lord's six-foot gauge arose to bedevil the situation. Most of the roads that led down into the oil-producing district were standard gauge, and therefore both the broad-gauge Erie and the Atlantic and Great Western were in a poor position to handle their cars. In 1871 the general manager of the latter road wrote the board from Cleveland, begging for $650,000 for 6,500 tons of third rail to be laid from Leavittsburgh to Corry for a standard gauge to handle both coal and oil cars up from northwestern Pennsylvania bound for Cleveland and its docks. The company's funds were dwindling rapidly.

Reports were beginning to leak out that matters on Atlantic and Great Western were not going as well as they should be going. The sharp-nosed *New York Herald* was saying in 1870, "The directors and others connected with it seem to have a strange lack of energy and foresight when a little of each might have rescued it from bankruptcy at which it has arrived." Apparently, it was as hard for Atlantic and Great Western to make money as for its parent line.

On March 19, 1872, General George B. McClellan, who had become president of the road, wired McHenry in London:

"To keep road running need two hundred thousand pounds immediately or shall be compelled to take off passenger trains."

It is not in the record whether or not McClellan ever got the two hundred thousand pounds, but the road did not remove the passenger trains.

An era of Micawber-like optimism once again was beginning to prevail in the offices of the Atlantic and Great Western. In 1871 its officers were preparing a circular to be sent to the stockholders and the bondholders of the company. It read in part:

"The directors of the Atlantic and Great Western Railroad have decided to lay a third rail throughout the entire length, in order to bring the system into harmony with connecting roads, as well as the Erie Railway which (alone among them) is a six-foot gauge. At the same time they propose to extend the line from Salamanca to Machias, a distance of twenty-seven miles, to the northeast in the state of New York, where it will meet the Buffalo and Washington Railway (now the Pennsylvania) giving direct access to Buffalo, a

point to which the policy of the company has always been directed as affording an outlet to the great coal and mineral traffic in exchange with the great staples of the Northwest. It appears from published returns that during last year 78,000,000 *bushels of grain were received in Buffalo, with large quantities of lumber. Buffalo is one of the largest livestock distributing markets in the United States. The construction of the international bridge at this point opens a communication with the whole Canadian system of railways.*"

Eventually, Buffalo was reached from the southwest by the Erie, but in a totally different way. The Buffalo and Southwestern was built from a point east of Jamestown up to the important railroad center at the foot of Lake Erie and was opened to traffic in 1872. The plans for an extension of Atlantic and Great Western from Salamanca to Machias was never carried through by Erie interests. But a year or so later the line was built in connection with a road from Rochester which was opened in 1871. This became the Rochester and State Line (afterwards the Buffalo, Rochester and Pittsburgh, and now a branch of the Baltimore and Ohio system) which for years furnished an active and valuable connection with Erie at Salamanca.

The rest of the story of Atlantic and Great Western is quickly told. In 1874 the unprofitable but rather valuable road was leased to the parent Erie, a lease which presently was repudiated by the president of the Erie, Hugh J. Jewett, a bitter personal enemy of McHenry. It then went into receivership. Six years later it was sold under foreclosure and reorganized as the New York, Pennsylvania and Ohio Railroad, which quickly became known as the "Nypano." J. H. Devereau was president of the new company, and all of the offices were moved to Cleveland from Meadville. The "Nypano" was capitalized at $132,500,000 or at the fairly high rate for that day of $313,128 a mile. In 1883 it was leased to Erie, which in 1896 acquired the entire capital stock, and in 1941 the property of Nypano Railroad Company was conveyed to the parent company.

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*Additional Material**

From a loose letter in the William Reynolds collection, dated Boston, July, 1860, with no salutation and no signature. Marked "A Strickly Private Document."

Mr. . . . . .handed me the two Pamphlets about the Atlantic & Great Western Railroad and I have given them a hasty reading. They are evidently prepared to show the good side, not the risks, of the undertaking. The line relies (by these reports) upon a uniform gauge with long lines at both ends; the broad gauge as superior to the narrow — concessions on traffic from the New York and Erie Road and generally favorable grades, as compared with the other competing lines. I consider most of these positions of questionable soundness . . . . . .

*The pamphlets probably are J. W. Kennard's First and Second Reports. (E. H.)

I am a little surprised to see the wide gauge put forward as a merit to the prospects of any line. I had supposed that most practical men had come to the conclusion that it was more expensive to work than the narrow or common gauge and therefore would make a loss at rates which would not be losing to the other. The chief merit and claim is superiority for the cattle traffic and comfort of passengers. . . The general disadvantages of this gauge are very great. The weight of rolling stock to the paying load is greater than upon the other. The friction in passing through curves is very much increased and this is particularly unfortunate in the case of the Erie Road which has a great amount of strong curvature in the mountainous regions of the Delaware and Susquehanna. An engine of the same power will haul more paying load upon the narrow than upon the broad gauge of course it will haul it cheaper per ton. It is thought by many experienced men that the broad gauge has been to the Erie all the difference between success and failure. . . . .

On the question of grades. I think they are a little astray. The Lake Shore Line is not on higher ground than the Atlantic and Great Western, the land does not fall from Lake Erie southward but rises, the Atlantic & Great Western is on high land at the sources of the streams which empty into Lake Erie by the Lake Shore Road. . . and I think it is clear to any mind well informed upon the subject and unprejudiced that a ton of goods can be carried upon the route from any part of the west within reach of the Atlantic & Great Western line to New York cheaper than it can be carried by the Atlantic & Great Western and Erie Road and when it is considered that for 9 or 10 months in the year the Hudson River Craft take the freight from Albany to New York — 150 miles at from 50 cents to $1.50 per ton the margin in favor of that route is at once seen to be too large to contend against with a fair claim for good profit. I suppose no disinterested party qualified to judge doubts the fact that the New York Central can carry freight from the South Shore of Lake Erie to New York cheaper than the Erie can. It is not likely that the Atlantic & Great Western will be able to do it cheaper than the Lake Shore. The tide would always be against them on the cost of transport between common points.

It seems to me that the Pennsylvania Central can carry freight with its grades and gauge cheaper than the Erie can with its grades and gauge.

Fron Cincinnati business the Baltimore and Ohio has great advantage. When the Ohio River has a good stage of water, freight upon it is very cheap and freight is drawn to the River by all the interiors modes of transport.

The distance from the River to Baltimore (Wheeling to Baltimore) is but 379 miles, the rest of very cheap water carriage. The Atlantic & Great Western line has no chance to avail of those cheaper modes of transport to aid its traffic, but must put against it 853 miles of road of all rail carriages from Cincinnati to New York. The same may be said of St. Louis only in greater degree against them. The low rates fixed upon the Ohio & Mississippi and the general competition of the Ohio River is the great cause of the want of success of that line. . . .

The Lake Shore Road has many advantages. It has a large passenger business in Summer and a large freight and passenger business in winter. It has many feeding roads from the interior of Ohio all interested with it because by taking business to it they pass it over their own roads and if they give it to the Pennsylvania Central it would cut off a very large part of their own road. . . I do not see why the lines (and there are several of them) which are crossed by the Atlantic & Great Western will not be interested against it. Their interest would not be to part with the traffic but to hold on to it to the end of their lines which are generally upon the water. . .

It would seem to me that this road (A & G. W.) lacks one great element which ought always to be carefully looked after by those who propose to invest in a new thing: *It is not needed.* No public necessity calls for the construction of such a line and where this call is not clearly apparent a line will rarely ever pay. Practically the whole of the business it seeks is already accomodated. It has therefore got practically to compete for its whole traffic with other lines, many of them doing a large local business which is their main reliance and which being so will enable them to contend all the more sharply for the traffic common to all. It has no major connections. They are all against it. Even the Erie, bad off as it is, has an end upon the lake and but for the New York Central which has the other upon the Hudson River it would be able to command a good business at fair rates. Take its lake traffic and most of its long business would be gone.

To the Erie road the construction of this line is of great importance. Once built, it would be completely in the power of the Erie Road that they could make it useful and valuable to them. That it would be of advantage to the Ohio & Mississippi line is not so clear. It would perhaps be of ample speculative advantage to them to raise somewhat the value of their securities in the Market and enable parties now carrying it to shift the load to untried shoulders, there is at present in both the Erie and that line (O & M.) therefore a strong motive for favoring that line but being both bankrupt concerns they do not form a very strong alliance for a new enterprise to rest its future prospects upon. There may be good points in this enterprise which should make it inviting to Capitalists as an investment (but) in the hasty look I have given it, only taking up the pamphlets at 9 o'clock this evening, they have not occurred to me. . . .

Yours very truly,

George Stephenson

By Ada Louise Barrett

INTRODUCTION AND CHILDHOOD

The history of George Stephenson and some of his early locomotives and railways is not the story of their invention, for locomotives were the product of many minds. His part in the establishment of railways was well summed up in the speech of the Duke of Wellington when the latter opened the Liverpool & Manchester Railway on September 15, 1830. Said the Duke, in part:

> *"By your genius, you have taken the imperfect inventions of your predecessors, and, fusing them with the products of your own genius, have created the steam locomotive and the railway."*

It was George Stephenson and his son Robert who planned and made the "Rocket", father of all steam locomotives. It was George Stephenson who built the first railroad and proved for all time that a "traveling-engine" with a train of cars attached would ride the rails and take the curves without falling off, and that the coaches would follow; a scientific fact which contemporary engineers absolutely refused to believe.

"The Father of Railways" was not only a genius and a man of remarkable vision, but he had indomitable perseverance — the perseverance that must be co-existent with true genius, without which genius is useless. His PERSEVERANCE may be said to be the keynote of his life and the characteristic which sustained him through every opposition and adversity with which his life was filled.

CHILDHOOD

"The Father of Railways" was the second son of Robert and Mabel Stephenson. He was born in the High Street House in the mining village of Wylam, about eight miles from Newcastle-on-Tyne. The house was a two-storied dwelling, divided like the others nearby, into four apartments, each of which was occupied by a laborer and his family. George lived in this very humble home until he was eight years old. None of the colliery children went to school, and George was no exception to the rule, but he was kept busy at a very early age, fetching firewood, picking coal from the pit-side, running errands and doing odd jobs within his powers. One of his major occupations was "minding the baby" and seeing that the younger children did not run on the track which passed the family mansion. Great heavy chaldrons set on solid wooden wheels filled with coal and drawn by draught horses were a source of danger to all the younger inhabitants. There was no fence or other protection to safeguard the little ones and eternal vigilance day and night was necessary.

Another of his occupations was "taking feyther's dinner" to "Old Bob." Robert Stephenson was known as "Old Bob" while still a young man. He seems to have been an amiable man, and he certainly would have astonished some naturalists with his knowledge of wild birds, of which, like his famous son, he was very fond. When he settled down at Wylam, he had been put in charge of a Newcomen pump which was used at the adjacent Wylam Colliery. This particular pump was worn out before "Old Bob" ever saw it, and it became worse and worse until it was an "awesome sight to look at" before it was finally taken down. But to George it was perfect. He was never tired of asking questions concerning its workings and was content to listen for hours to his father's explanations or expatiating on its perfections.

When George was eight years old, the coal seam at Wylam gave out and the family moved to Dewley Burn Coal Mine. Bob was made fireman of a new Newcomen pump, with Robert Hawthorn as engineman. This man was the father of the celebrated Newcastle engineer. Robert Stephenson secured the central cottage of a group of laborers' dwellings and, such as it was, the family had a house to themselves. This was also situated near the same railway. As soon as possible, George obtained work tending cows for the princely sum of two pence per day. The work was light, requiring watchfulness and with Tom Thirlaway, a new friend, George began making a model of Dewley Burn Coal Mine. The two boys gathered scrannel reeds and clay from the adjacent bog, and with corks, string and other odds and ends, made their little pumps, corves and clay engines. Both boys were often puzzled over some engineering problem and when George went home he plied his father with questions. Occasonially he would get his father out of the way for a few minutes and when that good man returned, he often found his inquisitive son had unscrewed some parts to find what it was for and see if he could improve matters, or clear up his own problems. Herding the cows and tinkering with his father's Newcomen pump were the only schooling this eight-year old child had. Another ten years were to pass before he even knew the alphabet.

YOUTH, EDUCATION AND YOUNG MANHOOD

The herdboy and toy coalpit period of "Geordy Stivvison" lasted about six months and then he found regular employment as farm laborer and assistant ploughboy, although he was not big enough to stride across the furrows. The farmer soon found that the boy could be trusted with animals and was fond of them, so much of this work was left to him and his wages increased to four pence *per diem*. He had to walk both ways though the farm was a considerable distance from his home, and he had to start work at six o'clock in the morning. He would soon have "graduated" into an able-bodied ploughman (notwithstanding his years) but he wanted work amongst mining machinery and kept a sharp look-out for it. At length he was given a job as "picker separating the good coal from dross, stones, pyrites and other impurities and now he was proud

to be known as a worker at the mines, earning the munificent sum of sixpence a day — three shillings a week. He was employed first at Dewley Burn Pit, but soon afterwards was transferred to Black Callerton Pit, two miles distant, and had to walk to work and back every day, in all weathers. In spite of his hard work and long walks during the week, he still went with his father and brothers along the lanes and up and down the denes, as they looked for robins, wrens, blackbirds or went fishing in the River Tyne, where salmon was still plentiful. "Old Bob" used to deliver himself of lectures on kindness to birds and any helpless little creatures. He would not permit his boys to take the nests or destroy the young birds, although they very often found injured ones which they took home and nursed back to health. A blackbird became so tame, he used to come into the cottage at night, perch himself on one of the bedheads and sleep with the family. He stayed with the Stephensons for years, went off in the spring to rear his family and returned to spend the winter with his adopted hosts. But one autumn he failed to return.

George's next employment was "driving the ginney horse." The gin looked something like a large drum lying on its side, with a rope wound round it, one end of which was fastened to the buckets of coal drawn from the mine and the other end of the "ginney horse", which it was George's duty to drive round and round all day. But at the end of the monotonous day, the boy sped home to care for his tame rabbits, and, with his friend Tom Thirlaway, continued his mining operations. He consulted his father regarding the problems his colliery presented, spent many hours learning all he could about the Newcomen pump, and probably knew more about it than his father. Evidently his employers were watching the boy, for a promotion came much sooner than he expected. And what a promotion!! They made him assistant fireman on his father's Newcomen pump at a shilling a day. Soon after this the coal at Dewley Burn Pit gave out and the family moved to Jolly's Close, near the village of Newburn, where another pit belonging to the Duke of Northumberland had been recently opened out. George worked at other pits in the locality for a couple of years, gaining knowledge of different engines and it was while he was at Throckley Bridge that one day he dashed out of the pay office, threw his cap in the air and shouted — "I'm a made man for life!" His wages had suddenly been increased to twelve shillings a week!" The Water Row Pit was opened near Newburn and old Robert Stephenson was made fireman and his son George engine-man or plugman of his father's engine — his father's superior!! And now George made an intensive study of all the engineering equipment he could get a hold of. He was considered the best unlettered mechanic for miles around. Unletletered! He could go no farther, for he did not know a letter of the alphabet!

It was during these years that George and his sister Eleanor went to the Newcastle Fair where Eleanor wanted to buy a straw bonnet, but discovered too late that she did not have enough money. Goodnatured George saw the tears of disappointment in his sister's eyes, shouted to Eleanor —

"Bide here, Nell, till Ah coom baack and I'll get t' siller for t' bunnit." Hours passed, darkness fell and still George did not return. Eleanor was alarmed and self-reproachful picturing George dead at the bottom of Pandon Dene — where was he, where was —

"Here I be, lass. I hae gotten t' siller for t' bonnit." And there was George, his pockets bulging with the heavy pence of the period, which he was hauling out by the handsful. So off went the happy children and bought the bonnet and many other things of which they had not dreamed when they walked from Newbern that morning.

EDUCATION

George now began his education. He took lessons in reading and writing three times a week from one Robert Cowan who kept a night school and at the end of a year he was able to write his own name. His next tutor was Andrew Robertson and now George added arithmetic to his studies and his progress was unusually rapid. Andrew Robertson used to set the sums for him in the evening, which he worked out the next day, taking the results to his teacher the following evening. But soon after this, Stephenson was moved to Black Callerton Pit and, rather than lose such a pupil, Robertson packed up his belongings and went to Black Callerton too, where he was much more prosperous. It was here that Stephenson learned to brake, but one of the other brakesmen Locke, refused to work while George was braking. One day Mr. Nixon the manager happened to pass while the works were idle. He demanded to know the cause and Bill Coe, one of the head men, told him why. Nixon ordered the work to be resumed and also that Stephenson was to be given his chance of learning to brake. Locke was the father of another famous engineer, though only a humble workman at this time.

MARRIAGE

Soon after this, George was appointed engine man at Ballast Hill, where shiploads of Thames mud, slag and other rubbish were shot off the vessels into waiting wagons, which were linked and taken up Ballast Hill and their loads tipped out. This new employment was too far from home, so George boarded with a farmer, and there met his future wife, though he asked her sister first. He also aspired to another young woman, the daughter of a prosperous farmer, but the irate father prevented the match, so George asked Fanny. They were married and went to live in one of the laborers' cottages on the River Tyne. When they were settled, George resumed his studies, and was kept busy also in repairing boots and shoes, a trade he had learned. He also made buttonholes for the pitmens' clothes, had learned to cut out their suits and finally to make them. One of his presents to his bride had been a fine eight day clock, the customary groom's gift to his bride in that locality. One evening while Fanny was preparing supper, the chimney caught fire. The neighbors dashed in, could not control it from that point and then went to the roof

where they poured down buckets of water on the fire. The fire was out, but the clock was soaked and clogged with steam soot and fat. When George came in, he found Fanny inconsolable. After comforting the bride, George set to work to repair the clock and it was soon going as well as ever. His success brought him fame and he now became clock and watch mender for the locality — and this in a neighborhood where clock menders were very skilled.

Robert Stephenson was born December 15, 1803. The child was very sickly and at the christening the infant was adjudged "a wee sickly bairn, not made for long on this earth." Fanny became delicate and George had much of the care of the child when he returned home at night. A little girl was born but she died in a few weeks and then Fanny died, a victim to consumption, which Robert gave evidence of having inherited. George was inconsolable, left the child in charge of a reliable woman and went to Scotland, where he was employed at Boulton & Watts Spinning Works in Montrose. One day he received a letter from home stating that his father had been blinded by escaping steam and his parents would probably be sent to the workhouse. George returned home immediately, to find his house closed and his child gone, also the foster mother; that his parents were on the point of being sent to the workhouse, and owed fifteen pounds. He soon learned that his brother Robert had married the housekeeper and they had taken the child into their home. George paid off his parent's indebtedness, made them comfortable and then looked for work. This was not easy to obtain, so he took whatever he could get until better times should come. Out of his earnings he had to support his child, his parents and pay for a soldier's keep as the Napoleonic wars were raging. He finally persuaded his favorite sister Eleanor to become his housekeeper and during her long residence with him, she proved to be the very best of foster mothers, and saw that the delicate child was well nourished. As he grew older, the two used to walk to farmer relatives who lived at a distance. They took their food in a package, and regaled themselves with a half pint of ale between them as they lunched. Young Robert informed his hearers one day that. . . "Auntie Nell can never pass a 'yell' hoose without entering it." . . . forgetting that he had had his share, without the trouble of fetching it. He was sent to Tom Rutter's village when the time arrived for him to absorb education via the unpleasant canings, which he did not relish. One day he begged his father to allow him to glean with Eleanor instead of going to school. George hesitated, but finally decided that "Experience was the best teacher," and after three twelve-hour work days, Robert weepingly begged George to allow him to return to school. He was next sent to Bruce's School in Newcastle, still in existence, and later to Edinburgh University.

THE GEORDY MINER'S SAFETY LAMP

Like all colliery men, George was deeply concerned with the disastrous explosions which so often occurred. After one unusually disas-

trous accident in the local coal mine, he set himself seriously to make a lamp, and many were the discussions and experiments with the local technicans, and many were the small explosions and accidents before George made one to his satisfaction. In company with Nicholas Wood and others, he took it to the mine, and held it up to one of the worst "blowers", but it simply flickered and went out, as George had prophesied. He made some minor improvements and in December 1815 orders were received from the Killingworth and other collieries in the North where it was used. The Humphry Davy lamp was never used very much in the North as George was considered the "Inventor" of the Miner's Safety Lamp. Sir Humphry Davy "invented" his lamp AFTER Stephenson's had been in use for some months and for years the dispute as to the real inventor was waged. To the brilliant man of science was awarded the government prize of a thousand pounds and to George was given a consolation sum of One Hundred Pounds. All the North Country was infuriated at the injustice done George Stephenson and the local men of science raised the sum of One Thousand Pounds in appreciation of HIS invention, while the colliers subscribed for a watch, suitably inscribed which Stephenson prized highly, as coming from the men whose lives he had tried to preserve. He was also presented with a tankard.

THE KILLINGWORTH ENGINE WRIGHT

After many months of looking for employment, George was given his old work at the West Moor Pit. His mechanical ingenuity was now well known and he was given a very free hand when put in charge here. The confidence of his employers was greatly increased when in 1812, he was successful in clearing the new mine of water by means of a new model of a pump, which all the engineers, from near and far, had failed to do. This success was rewarded with a promotion and his salary was raised to a hundred pounds a year, with the use of a galloway, a little horse, to be used when going the rounds of the collieries now under his supervision. His next claim to distinction was his invention of the "Geordy Miners' Safety Lamp." By this time, his inventive genius had made the Killingworth Colliery one of the most notable in the North but he was still dissatisfied with it and now determined to construct a locomotive — or at least, draw the plans and designs and approached Lord Ravensworth with a proposition to build one for the works. Both Lord Ravensworth and his son, Sir Thomas Liddell, had watched Stephenson for years, had noted his quiet industry, his indomitable perserverance, his honesty and sobriety, so decided to capitalize this venture. The result was "Blucher," built at the West Moor workshops, with John Thirlwall, the blacksmith, superintending under Stephenson. The tools were inadequate, the mechanics the roughest of working men, but in the fullness of time, "Blucher" emerged from the blacksmith shop, a full-fledged steam locomotive. True, she was somewhat clumsy and quite innocent of springs, but so were many after her. She was mounted on a wooden frame and had smooth wheels to fit on the smooth edge rails Stephenson had laid for her comfort. Primitive as both these were, the locomotive

and the railway were born, Spur gear was used to communicate the motive power to the wheels and Hedley's steam blast was used. Hedley, the exceedingly clever Manager and Viewer at the nearby Wylam Colliery had "invented" the steam blast to lessen the noise of escaping steam but it remained for Stephenson to utilize this steam. "Blucher" was tried at Killingworth Colliery on June 25, 1814. She was very satisfactory and could draw on one trip, several times the loads which could be hauled by horses. Before the end of a year, Stephenson had discarded the spur gear as not being necessary. He utilized the escaping steam by leading it to a small hole in the smokestack with the ends turned up therein. During the next few years, he made several more engines for use above ground and below; the Killingworth Colliery was now, indeed, the very finest in all England, or anywhere else. Stephenson constructed a small railway for a local colliery and obtained permission to leave his work when Hetton Colliery Managers asked him if he could make a railway for them. . . And so, for a time, Stephenson sat back and rested on his laurels while the business men in Stockton and Darlington wrestled with the problem "Canal or Tramroad?" Since about 1812, he had watched the controversy and with the success of his railways and locomotives at the mines, he had decided to see what could be done farther afield.

THE STOCKTON & DARLINGTON RAILWAY

Very few persons know that it was Quaker capital which founded the railway. Edward Pease, a wealthy woolen merchant of Darlington, Durham, had discussed the necessity for an improvement in transportation but was not in favor of a canal, for as it was stated "A canal could not be brought to the pit's mouth" as a tramroad could and it was a tramroad that Edward Pease wanted. There were no canals in the North of England. He was taken by surprise one summer evening when the maid announced that two men wanted to see him and they had come all the way from Killingworth. Mr. Pease went down to the kitchen and there met George, who, cap in hand, advanced and said

"Sir, I'm only the engine wright at Killingworth that's what I am."

"Glad to know thee, Mr. Stephenson," said Mr. Pease, "and what do thee want of me? I don't hire men here, you know, but at the Works."

"Sir," said George, "it isn't work that I want, but, sir, I've a letter from our Mr. Lambert, our manager."

After reading the letter, Mr. Pease had a very long conversation with George and found that this man contemplated laying a railroad and would very much like the contract for doing so. Mr. Pease was favorably impressed with this unusual man but hardly thought him capable of doing such a piece of engineering. However, he discussed the country to be traversed and the gauge, which George insisted should be four feet eight and one half inches and that the same should be continued on all the railways of the future in England. Amazed at such a statement, Mr. Pease asked George if he really thought railways would ever be so common.

George stoutly maintained they would, especially when they were traversed by locomotives such as he had at Killingworth Colliery. Mr. Pease was still more astonished, but said they could discuss this later and promised to go to Killingworth shortly and inspect the equipment and endeavor to get him appointed engineer, if his references proved satisfactory. He went to Killingworth some time later and was taken about the works with his Quaker friend, Mr. Richards. They were satisfied with the feasibility of the locomotive and when the Stockton & Darlington Railway Bill was prepared, Mr. Pease inserted a clause which empowered the company to use locomotives and to carry passengers also. George's salary was Three Hundred Pounds per annum.

BUILDING AND OPERATION OF THE FIRST PUBLIC RAILWAY

Stephenson was seriously handicapped by the lack of proper instruments, tools, trained workmen, and by the lack of any workmen at all, as he had to train many in the work for which they applied. He had to make contacts with owners of standing timber, personally to select crews of axemen and teach some of them how to wield an axe. He had to find and choose the stone from which the original sleepers were made and had to buy the horses, arrange for their feed and stabling and attend to hundreds of other details, for there were no contractors for any part of the work. There were several small bogs to be filled in but the chief one was Myer's Flat which persisted in remaining a Flat after thousands of tons of material had been thrown in. The country people declared that the fairies did not approve of being deprived of their haunts and blamed them for removing the posts which the men were trying to set, for they were often removed when morning came and all the work had to be done over again. But finally the bog's appetite was satisfied and after that, the line was laid in peace. This was but a single track at first, with sidings or turnouts every quarter of a mile and a few watering places for the locomotives, which carried only one barrel of water. By this time, Stephenson, with Mr. Pease, Mr. Richards and Robert Stephenson, had founded the present Stephenson Locomotive Works in Fourth Street, Newcastle and from it there came, in due course, a locomotive to be known to future generations as "No. 1", also as "Locomotion", which was tried out on Aycliffe Level and then used as a work engine before her Triumphal Day at the opening of the railroad. She is now on a pedestal in front of the railway station at Stockton. Neither "Locomotion" or any part of the line were blitzed during the Battle of Britian.

OPENING OF THE RAILWAY.

September 27, 1825, was fixed as the day for opening the first public railway in the world, and Stockton was crowded with people wishing to see this great event. Stephenson had constructed the "wagon" which would be used for the committee directors and "proprietors." There were

thirty-six units to this historical train, including engine and tender, and the long train was filled to overflowing, while crowds ran after it (once it had started without exploding, as some people expected). The train and its cheering occupants, also a couple of bands, were enveloped in smoke, burned with hot cinders and flying steam, as they sped on their way to Darlington which they reached about twelve o'clock. Besides passengers, the train had brought freights of coal, flour and other things. The coal and flour were given to the poor of Darlington.

The visitors enjoyed substantial lunches at the hotels or inns and with this, the laborers, the embryo "Army of Navies") were served unlimited beer. Many persons wished to go to Stockton that evening and preferred "the train" to the stage coach. Seven hundred passengers climbed on board and once there, scores hung on by their ears, for there was no space available and the trainload was locally described as "like a swarm of bees." "Locomotion" descried her arch-enemy, the stage coach, just as they were approaching Stockton and with a derisive hoot, put on her best speed, arriving at the station just ahead of her discomfited rival.

The townspeople were lavish in their hospitality to both the brains and brawn of the newly built railway founders and it was twelve o'clock that evening when the last reveller left for home.

The next day the railway commenced business and, amalgamated with the other roads in England and Scotland, has never ceased operating.

THE LIVERPOOL AND MANCHESTER RAILWAY

During the time the Stockton & Darlington Railway had been under construction Stephenson had been hindered by the fact that Robert's health failed. The physicians prescribed rest and a change of climate. He had worked far beyond his strength, had surveyed and taken levels under the most adverse conditions and had also assisted Mr. James in surveying the recaltritant Chat Moss, of which more hereafter. He was engaged by a South American Mining Company to go to that country and report on the conditions and later was in full charge of the mining operations. He recovered his health and was very happy in his new environment, but George felt the loss of his son keenly as a father and as his most valuable assistant.

The proprietors of the proposed Liverpool & Manchester Railway had engaged him as surveyor, but the canal interests were determined that this "tram road" which was all that was at first proposed, should never materialize. These canals were the only means of transportation to be seriously considered, as the slow horse-drawn wagons were not serious competitors — one horse and sometimes two being required for every wagon-load of coal. During his survey, Stephenson was pelted with stones, chased off properties by gamekeepers with guns and his instruments smashed, all at the instigation of the owners or partisans of the canal

party. In many cases, he found it necessary to take the levels at night, so it is small wonder that his survey was inaccurate.

The Liverpool & Manchester Bill went into Committee in the House of Commons on March 21st, 1825 and George Stephenson, as surveyor, had to appear as a witness. In the progress of the proceedings, he was subjected to withering cross-examinations by Alderson K. C. and a formidable array of legal and scientific talent, on some subjects of which he had as yet, an insufficient knowledge. But brilliant as the scientific talents opposing him were, they could not see through George Stephenson's claim that it was possible to run a railway train across Chat Moss — a thirty-five foot deep Moss. Nor would they listen to his explanations, except to jeer at them, thus rendering poor George more inarticulate than he really was. He spoke the broad dialect of Northumberland and when his tormentors saw that their laughter embarrassed him, their ridicule and insults increased. He heard them say he was "fit for Bedlam" and that "the man was demented". Thanks, too, to the temptations held out by the canal owners, Stephenson had also been "badly served" by his engineers and others. He found difficulty in expressing himself and much of his evidence was discredited. The contested lasted two months and Stephenson was frequently called on as a witness. Then the company decided to withdraw the Bill and make another application later, as they now had the measure of their opponents and had already decided on their course of action.

Shortly after this another Bill was prepared and in due course, passed without opposition. The brothers Rennie were engaged as surveyors and took a slightly different route, avoided certain properties and the company placated some of the canal partisans. They wished to engage Stephenson as principal engineer but thought it good policy to offer the post to George Rennie. He promptly accepted the offer, but stipulated that he could make only six visits per annum and must be permitted the choice of a resident engineer. The company promptly declined the generous proposal and immediately appointed Mr. George Stephenson.

The engineer moved at once to Liverpool, where he took a large house in order to accommodate his large "family" of student engineers, who worked in the field during the day and devoted the evening to theory of their profession. In 1819, Stephenson had married his first love. Elizabeth Hindmarsh and she made a real home for the young men who resided under her roof. Their studies over, the evenings were spent in a homelike atmosphere. Sometimes the tired George Stephenson told them he would "shut his eyes for a minute" and their fun would not disturb him. But generally he dropped off to sleep, exhausted Nature demanding that he should submit the same as other mortals.

CHAT MOSS

From an engineering standpoint, Stephenson's subjugation of Chat Moss was the most colossal undertaking of the railway and to make it more difficult, practically all the work was done by manual labor.

The Moss was four miles across, thirty-five feet deep and resting on a saucer like foundation, thus greatly hindering drainage. According to a writer in the days of Henry VIII, it was filled with sphanni which had accumulated since the Deluge. This was interspersed with layers of clay, with quicksand below. Consequently, the Moss frequently rose above the surrounding country. Nobody could stand on it more than a moment without sinking in. Stephenson overcame this first obstacle by having the workmens' shoes made with pieces of board nailed on, thus spreading their weight. Standing in a row at the side of the bog, they laid planks ahead of them and in plank lengths advanced a short distance.

For filling, heather, brush, sheep skins, hurdles and rubbish were thrown in. George Stephenson's intention was simply to make an embankment in the middle of the moss. It caved in many times. Finally Stephenson broadened the original ten feet to a thirty foot roadway. The heavy rains that year brought the moss up in huge banks on either side of the road, so drains made of tar barrels were driven in on both sides. Finally, the voracious appetite of the Moss gave signs of being satisfied and at last, a narrow railway was built. On account of their lighter weight, boys were chosen to run the little carts of material across the shaky little road. Dangerous work. Some fell in but were fished out. There were several accidents and deaths before Chat Moss was finally subjugated but before this, George and Robert Stephenson were envisioning the ROCKET.

THE ROCKET

At the time the Liverpool & Manchester Railway was being considered, a railway was all that was contemplated — horses were to be the motive pawer. So the company thought but NOT Stephenson. Unfortunately, locomotives were under a cloud and the company could not expect capital to be subscribed if it went contrary to public opinion. Actuated by this and Walker & Rastrick's Report of the Stationary engine, with its miles of ropes (all dependent on the weakest link) and its very expensive upkeep, they were on the point of deciding on this doubtful method of motive power, when Stephenson heard of their probably adverse decision. He hastened to the offices, and practically implored them in the most dramatic manner to give him a chance with the locomotives he understood — understood as no other man did, and referred to the Killingworth Equipment and all the locomotives and engines he had so far constructed. The officials of the company recognized the justice of his plea and did a wise thing — They offered a prize of five hundred pounds for a locomotive which was to be made according to their specifications to run not less than ten miles an hour. If after a trial, it proved serviceable, they would purchase it and others.

About this time, Edward Pease had written to Robert in South America, advising him to return home immediately if he did not wish to see the Newcastle Works closed and that his father's engineering work was suffering in other ways. Robert came home as soon as he could.

Arriving in Newcastle, he "unravelled the accounts" got everything in running order and then, with his father, turned his attention to creating a locomotive which must win at the competition at Rainhill, near Liverpool in October, 1829.

The essential characteristics of the "Rocket," the prototype of all steam locomotives, were as follows: The use of two steam blasts, the use of tubes open at one end and to the chimney at the other: the attachment of the firebox (surrounded by water) to the boiler: a direct connection of the locomotive cylinders to the outside of the driving wheels.

On the day of the competition at Rainhill, October 1, 1829, there were four competitors, viz:

NOVELTY, *made by* Braithwaite & Ericcson
SANSPAREIL *made by* Timothy Hackworth
PERSEVERANCE *made by* Mr. Burstall
ROCKET *made by* George and Robert Stephenson

Probably every county in England and several in Scotland were assembled to see the contest of the "travelling-engines", but to the disappointment of the crowd drawn from all ranks of society, only the "Rocket" was ready, so the trial was postponed till October 6, as the competitors were still working on their locomotives. To pacify the irritated spectators, Stephenson was asked to give the "Rocket" an exhibition run. She made twelve miles in fifty-three minutes and was mildly applauded.

The "Novelty," a blue and copper colored locomotive, carried water and fuel on the same wheels as the locomotive and the air was driven through the fire by bellows. She was called, but owing to a dispute as to the weight to be carried, her trial was deferred and Mr. Burstall was asked to take her for a short run. She ran for about two miles at the rate of twenty-four miles an hour.

The "Sanspareil" by Timothy Hackworth, was adjudged much overweight and an angry dispute arose, Mr. Hackworth accusing the judges of favoritism and cheating. However, he was allowed to take the trial but in the middle of it her cold water pump went out of commission so she was disqualified. Hackworth was furious and caused a considerable commotion, but his locomotive could not have qualified, even if for only one reason. He had sharpened the end of the blast pipe to fit into such a very small aperture in the smoke-stack that much of the fuel blew away unconsumed and she consumed, when traveling, 692 pounds of coke per hour.

By now, the on-lookers had come to the end of their patience and Stephenson was asked to attach wagons to the "Rocket" and take some of them on a trip down the line. He took thirty passengers at the rate of twenty-eight miles an hour to the amazement of his delighted audience, and was asked to be ready the next morning for the trial.

Early the next day, Stephenson's locomotive was taken to the end of the stage, and, in view of the spectators, her fire was lighted, her boiler filled with water and steam raised to a pressure of fifty pounds to the square inch. Wagons of about thirteen tons in weight were attached to her and the "Rocket" ran backwards and forwards over the two-mile test railway. Including stops, she made thirty-five miles in one hour and fifty-eight minutes. The second ten trips took two hours and three minutes, maximum speed twenty-nine miles an hour.

The other locomotives had not yet made their official tests, but there was no doubt now as to whom the prize would go. But neither the "Novelty" nor the "Sanspareil" were ready and when they made their official runs, both broke down.

On October 14, 1829, Mr. George Stephenson was awarded the prize of five hundred pounds, which he generously shared with Mr. Booth, Treasurer of the Liverpool & Manchester Railway, an exceedingly ingenious young mechanic. It was he who suggested the copper tubes in the "Rocket", and Stephenson possessed the "practical ability" to carry it out, as Robert Stephenson afterwards said.

The "Rocket" was taken immediately to Chat Moss and there served as a work-engine until the day of the opening.

OPENING OF THE LIVERPOOL & MANCHESTER RAILWAY

The opening of the Liverpool & Manchester Railway tunnel in Liverpool occurred during August, 1829. The Tunnel was lighted brilliantly with gas, then quite a recent invention. Tickets were a shilling each and the sum realized was divided — one half for the infirmaries of the two cities; the other half Stephenson desired should be distributed amongst the workmen who had been injured or crippled during the construction of the railway, or in the case of the death of the bread-winner, to be given to the wife and family of the dead man. There was great excitement in Liverpool that day and the newspapers were enthusiastic.

The opening of the Railway on September 15, 1830 marked the culmination of Stephenson's dreams. The day dawned brilliant with sunshine. The precession of locomotives was led by George Stephenson with the "Northumbrian." Robert followed with the "Rocket," James Stephenson with the "Arrow" and the most trusted of George Stephenson's engineers were on the "Comet," "Meteor," "Phoenix," "North Star" and "Dart."

As they sped through the Olive Mount Cutting, the sky had become clouded and by the time they went up the famous Sutton Incline and over the Sankey Viaduct, it began to rain, which soon became a downpour. The procession of eight trains stopped at Parkside to take on water and fuel and here a sad accident occurred to sadden this historic day. The Duke of Wellington, who was to officially open the railway, had

stepped off the "Northumbrian," "The Duke's train" and the other engines were coming up rapidly on the other track for review by the Duke, rather a dangerous proceeding, and on this occasion, a fatal one. Mr. Huskisson of Liverpool was on the point of shaking hands with the Duke, when a cry of terror by the pasengers warned him of his danger, too late for he was struck by the "Rocket" and his leg crushed. Lord Wilton applied a tourniquet and the poor man was placed on the "Rocket" train, now driven by George Stephenson. Mr. and Mrs. Huskisson and a few others, were taken to Eccles Rectory, about fifteen miles distant. Stephenson made the journey in twenty-five minutes. On his return to Parkside Station, it was decided to say nothing of the matter when they arrived at Manchester, but to proceed with the celebration. A saddened party boarded the trains and the opening ceremony proceeded as soon as possible. The Duke paid a handsome tribute to George Stephenson's genius and perseverance under difficulties and discouragements which would have daunted most men.

After the opening, the passengers dispersed themselves to enjoy the bountiful refreshments provided by the Manchester hosts; to amuse themselves by running amuck the puffing locomotives and rolling stock and to kill time as well as they might till four o'clock when it was intended to begin the return journey. The Duke occupied himself by patting the heads of hundreds of infants, kissing them, or shaking hands with the proud mothers and must have had a strenuous afternoon. Everyone was glad when the notice to return to the trains was given. As the trains began to move, slowly at first, the crowds edged on the tracks so that it was hardly possible to advance at all. It had been raining all day and now as darkness was falling, there was considerable confusion. Finally six locomotives were attached and took the whole of the immense train through the inky darkness and pouring rain. There was no lights of any description so it was necessary to proceed at a snail's pace. One bright spirit presently suggested tying large bundles of oakum to the front of the leading locomotive and setting them afire. With this improvided headlight, the very long train arrived at Liverpool about ten o'clock, to be welcomed by scores of anxious friends and relatives who had begun to wonder what had become of the party they expected to greet at six o'clock.

Mr. Huskisson died at Eccles Rectory that night and so ended this ominous day that ushered in the foundation of the railways which have transformed the world.

GROWTH OF THE RAILWAY SYSTEM

With the opening of the Liverpool & Manchester Railway, George and Robert Stephenson became the most noted railway engineers in the country — Brunel to the South notwithstanding. The once despised "collier-fellow" had an ever-increasing train of engineers who would consult nobody but George or Robert when railway matters were under discussion. Both men set themselves to remedying many evils in the

newly established railway and were appointed, George as Consulting Engineer, Robert as Surveyor and Resident Engineer of the London & Birmingham Railway. George bought Alton Grange in Leicestershire, with the idea that he was going to relax a little. But he was in too constant demand to make this possible and when he arrived there found the temptations too great. There was coal, so he decided to mine it. But he was immediately under the necessity of providing homes for the workmen who flocked to Ashby-de-la-Zouch, so houses were erected for them and their families, also a chapel, church and a schoolhouse. He paid his work people well and his investment prospered. About this time, his coal began to be shipped over the line young Robert had constructed, the Leicester & Swannington and this fact gave keen satisfaction to father and son. Stephenson's opinion was soon wanted for local problems of owners of quarries, mines and other works, besides local railways for quicker transportation than at present prevailed. The Great Engineer was a social lion too, numbering among his friends such men as Sir Joshua Walmsley, Sir Robert Peel, Lord Ravensworth and other titled men, the most eminent scientists and in 1835, King Leopold of Belgium invited him to Belgium to discuss the formation of a national railway system in that country. During the next few years, Stephenson visited the king concerning other engineering questions and was the honored guest at a state banquet given to the chief of ministers including the English ambassador. While in Belgium, Stephenson the guest at a banquet given by the Engineer's Society. The dining room was handsomely decorated and the Union Jack was everywhere in evidence. A bust of Stephenson, crowned with laurels, was placed at the head of the hall at the upper end of the room, standing on a square table, was a model of the "Rocket." The honor done him by this illustrious group visibly touched Stephenson, as this august body had long been inimical to him and his theories.

At a private interview with King Leopold, Stephenson described the geological structure of the country, coal formation and other similar matters. He demonstrated his descriptions of the coal beds and used his hat as a model while the king followed his description with the deepest interest. Both enjoyed the interview and the only fly in his ointment was that George had unknowingly worn the shabbiest hat in his possession. He had probably made a hurried departure and picked up the first one handy. Stephenson was not a dandy, and away from home, was perhaps apt to be somewhat careless. At this time, his usual attire was a black suit, sometimes a little shabby and somewhat old fashioned in cut. with square pockets in the tails; white neckcloth and a large bunch of seals suspended from his watch ribbon.

George was able to indulge his love for animals and birds to some extent but had a little time to enjoy yet, the life of a country gentleman. As of old, he was particularly fond of the wild birds, so it was with real feeling that he wrote to his son Robert the simple story of the two robins. He was walking in his gardens and chanced to look up at the house. He saw a robin fluttering and striking itself against one of the windows so

ran upstairs and opened the window, on which the robin, unafraid, flew across to a corner of the room only to find its little mate dead, with four little ones under her also dead. Exhausted by its long beating against the casement, the father bird dropped to the floor, seemingly dead also. Stephenson revived and fed the little creature, but it died shortly afterwards.

TAPTON HOUSE AND A LITTLE LEISURE

George moved from Alton Grange in August, 1838, again thinking he would have the life of a country gentleman. But it was not until 1840 that he was able to do this even in a moderate way. Tapton House was — and is — a large roomy brick house in Chesterfield, on a hill, over looking the most lovely country in Derbyshire but the estate had been neglected and had run wild. The first thing George did was to make a wide path through the brush up to the house. This was done partly with a view to getting a short cut to the Chesterfield railway station. He hoped to put the neglected estate in order, but as soon as he arrived, he found other matters claiming his attention. He leased the Clay Cross Mines but this was not profitable at first, as it was bituminous coal and not favored in that locality, also, the railway rates were too high to make it profitable. But the laying of other railways brought the rates down, and in a few years the investment became a profitable one. He also erected the largest limeworks in the district near Ambergate Station and this was immediately profitable. Again he had to provide accommodations for the thousands of workpeople who applied for employment and appointed one of his intimate friends, a Mr. Binns, to see that every thing possible was done for the comfortable housing, well-being and education of parents and children he employed. He also inaugurated a sort of an old age pension fund to which employer and employee contributed — not equally, but all that he asked of them. At this time he founded a Mechanic's Institute for the benefit of young men of a mechanical turn of mind. In 1824, when he was working on the Stockton & Darlington Railway, a group of men had decided to form a Mechanics' Institute and had asked Stephenson to be their first President. At that time he was little known outside his own country and his presence at this first meeting did not shed much lustre on this humble group of workmen or their president. But as Stephenson became increasingly dominant in the railway engineering world, so did the Mechanics' Institutes multiply. The founder of these institutes encouraged mutual visits and by his advice — and presence when possible — fostered their growth in every way he could.

George Stephenson founded the Institution of Mechanical Engineers in 1846 and became its first President. On his death, his son Robert was elected President. George was always interested in young men and boys of a mechanical turn of mind, was willing to discuss their ideas and if they proved practicable, had them tried out at his works. If they were successful the inventions were patented. Stephenson often used them at

his own works and if this could not be done, the fact that the Great Engineer had approved them, was sufficient to warrant their success wherever they could be used.

Stephenson's locomotives invariably gave satisfaction, so they were naturally preferred on the Liverpool & Manchester Railway and others. Consequently, there was considerable grumbling by the other manufacturers of engines now springing up all over the country. One day, the engineer happened to be in the office when one of these disgruntled souls delivered himself of his opinions as to the favoritism shown George Stephenson, and demanded a test — he did not request one. The Father of Railways turned to him and said good-naturedly —

"Oh, very well, I have no objections; but put them to this fair test; hang one of your engines to one of mine, back to back. Then let them go to it; and" quoth the Father of Railways, "whichever walks away with the other, that's the engine."

At last in 1840, Stephenson began to find a little leisure and began to retire from active participation in railway matters in earnest by resigning from many of them, though he continued to the end of his life to be consulted at his home or at the works on many engineering questions. But with this new leisure, he was fully occupied with his limeworks, mines and other "business" interests and now began the work of putting the Tapton House estate in order. Under his active superintendence, the long neglected gardens blossomed forth into what might be termed "The Vale of Cashmere" in the Temperate Zone. These gardens faced South and every advantage which skill and wealth could command was taken of their favorable situation. " 'Old George's' one belief, save in steam, coal and iron, was in these gardens. Here he never calculated cost, so proud of them and justly so." He was more interested in fruits and vegetables than in flowers, preferred the cabbage to the cabbage rose and the practical value of his kitchen gardens to the most exquisite blossoms producible to an outdoor garden. But mere outdoor gardens were not sufficient problems for the Great Engineer. He built vineries, pineries, apiaries and melon houses and constructed forcing houses which he heated with water, the first to be seen in the locality. His melon house was one hundred and forty feet long and his pinery sixty feet. In his ten forcing houses, he had grapes, melons, peaches and exotics or tropical fruits. As the melons grew, he aided their growth by suspending them in gauze baskets so that the tension on the stalk was lessened. For a long time, his cucumbers persisted in curling, but at length he reduced them to submission by placing glass cylinders in front of them into which he inserted the wayward young "cukes", so as there was no other direction for them to go, they followed "the straight and narrow path" which leads to perfection and so became perfect — the cucumbers of the Great Engineer's dreams. He exhibited some of the cucumbers to a party of friends who were visiting him and told them how he had overcome their pervisity as he said gleefully,

"I think I have bothered them noo."

The Battle of the Cucumbers occurred in 1845.

The products of his hobbies won many prizes at Horticultural Shows and he spent immense sums on them, thereby keeping many people employed and stimulating trade. Some of his boyhood interests were revived and he began again to raise prize rabbits, also enormous cabbages and gigantic cauliflowers (both well flavored). Much of his success with vegetables was due to his thorough knowledge of soils and at the agricultural shows he often gave good advice to farmers on vegatation. He also raised fine cattle and on this subject, was wont to speak of them in railroad terms.

"Y' see, sor, Ah laak to see t' coo's back at a gradient something laak this", drawing an imaginary line "and then t' ribs or girrders will carry more flesh than if ther' laak this," drawing another imaginary line. He experimented with various kinds of cattle feed. When fattening chickens for the tables, he usually confined them in dark houses where they were fed heavily several times a day. But fattening them was not George Stephenson's sole interest in the birds. He was equally interested in giving them a good start in life via a steady uniform heat. Many were the chicks he started on a career without a feathered maternal parent, most of said careers destined to end on his estate in the somnolence and repletion of the fattening pens. His embryo incubatars stimulated the serious consideration of artificial hatching.

The apiary was situated at the top of the hill near the house but thousands of bees died for no apparent reason. One day Stephenson noticed the heavily laden insects flying weakly up the ascent and many of them dropping to the ground. Very much puzzled, he asked Mr. Jesse, the well-known naturalist, to pay him a visit and together they watched the bees. They concluded that the insects could not make the ascent when burdened, so as they could not go up to the hives, the hives were brought down to them and then everything went well.

Stephenson was not fond of reading except on his engineering matters. Novels generally excited him and when reading other books, he often went to sleep. He sometimes went to the theatre or opera when in London but he often dropped off to sleep there too. He enjoyed singing wih others, old songs, when he had visitors of his early days and liked to finish the evening by sending for a large basin of oatmeal, some jugs of boiling milk and stirring it himself, when it was offered to his guests. Stephenson's tastes were of the simplest, so was his food, and his robust health and strength till he was well advanced in life may be largely attributed to these facts. At this time, Stephenson was hale and hearty and his handsome features, keen dark eyes and silky white hair contributed to make him what he was, a picture of manly perfections not likely to fade from memory. He was not quite as strong as formerly and no longer dared a stalwart visitor to a race up the Tapton House hill.

He liked to visit old friends in Killingworth, but some of them were a little shy of talking with such a distinguished gentleman. If George

thought any of his old friends were thus avoiding him, he would strike his stick on the cottage door and call genially,

"Well, and hoo's all here t' day?"

Sometimes he found all was not well and many a weakminded workman who was too fond of drink, would be set on the right path, with a substantial sum to aid him in keeping on it. It was often with tears in his eyes that Stephenson would beg the man for his own sake, for that of his wife and shildren, to "go straight." Many were the five pound notes given to his old friends while shaking hands in farewell. Many, also, were his pensioners, among them (even in the days of his early poverty), he "had struck in feyther" to his wife's sister when her husband died, the Robin Gray who had been his groomsman when he married Fanny Henderson.

His last three years were full of the best life had to offer. Possessed of good health and a good wife who had proved herself to be the best of helpmates, the proud and affectionate father of a famous and equally affectionate son, of great wealth and knowing that both would always be two of the brightest stars in the Engineering Firmament and last, but not least, that he had never "scamped" or cheated. George Stephenson had every reason to be satisfied with his accomplishments and an undeniable right to enjoy the last three years which were his final earthly reward.

In 1845 an English company was formed for the construction of a railway in Spain. Sir John Walmsley was asked to negotiate and Stephenson offered to go with him as friend and adviser and to survey gratis. He had never been to Spain and was glad of an opportunity to see that country. A most unfortunate decision. The hardships both men endured as they made their way through the mountains on foot or drawn by mules, their almost entire lack of any food except black bread and goats' milk if they were lucky enough to get it and their sleeping in the open or sheltered in a filthy peasant's hut on the dirty mud floor, weakened Stephenson and on their way home, he became ill with pleurisy. Arrived at Harve, he took ship for England, after a skillful physcian had drained him of most of the little blood he had, and in this weekened condition arrived in England. Throughout the journey, Sir Joshua Walmsley had waited on him as tenderly as a woman might have done. He never left the sick man's room, and through it all, the indefatigable Stephenson persisted in preparing the report he needed directly he arrived in England. However, he soon recovered when he reached home, except that this terrible journey left its mark and he was never again the robust man he had been. To this Spanish journey may be attibuted his death two years later, when he was attacked by what seemed to be a mild sickness.

He was still guest of honor at the opening of railways and in 1846 invented a new self-acting brake, which had been adopted to a limited extent on the Liverpool & Manchester Railway while he was connected with that company. At a meeting held by them, when Stephenson was

to read his paper on the subject, he brought a "beautiful model" of it and stated that he was quite satisfied to lay his scheme open to the world and that he would not take out patent for it.

In 1847, Mr. Stephenson assisted in the ceremony of the opening of the Trent Valley Railway, which he had laid many years before this. The railway was not permitted to be constructed, George Stephenson being hailed as a devastator of the country-side. Now he was hailed as "one of the greatest benefactors of the age!" There were present Sir Robert Peel, members of Parliament, the wealthiest and the most influential personages of the county, the army was represented, the clergy— all were there, —but *now* to do honor to the "Father of Railways."

In December of the same year, he attended a meeting of the Leeds Mechanical Institute and addressed the young men on the necessity of "Perseverance" which seemed to have been the watchword of his life. In his speech he told them that although now crowned with honors, the architect of the railway system and the constructor of some of the greatest works of his time, he "stood before them as a humble mechanic." He spoke briefly on account of his now failing health and his words undoubtedly remained in the memories of his audience for many years. This was probably the last important public function at which the Great Engineer spoke.

About this time, Mrs. Stephenson became ill and died early in the spring. During her illness a housekeeper had been engaged, a very estimable lady, the widow of a clergyman. This lady was married to Stephenson soon after the death of the second Mrs. Stephenson.

On July 28, 1848, he attended a meeting of the Institution of Engineers, where he read an article he had prepared on "The Fallacy of the Rotatory Engine." This was his last public appearance anywhere, so far as can be ascertained.

A few days afterwards, Mr. Stephenson became ill with an attack of intermittent fever. It was not deemed serious, but "a sudden effusion of blood from the lungs carried him off, on the 12th day of August, in the sixty-seventh year of his age."

The sudden death of the Great Engineer was a shock to England and to the engineering world. Scores of people from all over the country came to pay their respects. Among these persons was the venerable Edward Pease, who had founded the Stockton & Darlington Railway. The close friendship which began then had never ceased. On the day of the funeral, Chesterfield showed its respects for the illustrious engineer by suspending all business. The Mayor, Aldermen and Councillors led the funeral procession, Members of Parliament, eminent engineers, scientists and professional men, including many from his own county of Northumberland, mingled with the thousands of George's work people, (some from far distant places.) It was a sorrowful procession that wended its way from Tapton House to Holy Trinity Church where George

Stephenson had been a communicant since he came to Chesterfield. He was laid to rest in a vault under the small chancel of the church, in front of the altar table. The church is very small so that it is necessary to turn back the chancel carpet when visitors wish to see the inscription underneath it, a simple "G. S. 1848."

Chesterfield is very fortunate in that it was in no way injured during the recent War and the tomb of the illustrious Engineer is unharmed.

In 1881, England and the railway engineering world honored the Natal Day of "The Father of Railways". On the hundredth anniversary of his entry into the Higher Life, let us again do him honor — the honor that is the need of true greatness and let it be told again and again that it was one of England's humblest — one of her poorest sons who wrought the miracle which has revolutionized the entire world through George Stephenson's indomitable PERSEVERANCE.

The foregoing is an outline of my book, a biography on George Stephenson.

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The Virginia Southwestern Railroad System at War 1861 — 1865

By Charles W. Turner

Introduction

The American Civil War was the first military conflict in which railroads were a highly important factor. Some lines had been operating in the South for more than twenty-five years, and by 1861 had formed a fairly complete network of tracks over Virginia for use of the Confederacy. Certain lines had made connections with other lines, and had agreed to uniform rates and schedules. Such lines might be considered to form a system over which trade and travel could flow. The destruction of these lines was a major goal of the Federal armies.

Three railroad companies, the Richmond and Danville, the Southside, and the Virginia and Tennessee, made up a system of railways extending south of Richmond to the North Carolina line and west to the Tennessee border. Though beginning as independent lines between 1846 and 1848, the tracks were connected, and in the next decade uniform rates were worked out agreeable to the respective companies. This system furnished the most complete transportation facilities for the area covered by the rails as well as contacts with out of state lines.

Before 1860 a majority of the stockholders were local investors, who were paid good dividends in spite of the fact that the railroads were built on insufficient capitalization. The state purchased at least three-fifths of the stock while the local government took some shares.[1] The system was dependent on northern and foreign manufactures for iron and rolling stock. Few extensions were planned or made during the war years. The lines were crippled, as the war dragged on, with raids, general wear and tear, and shortages in labor and materials. The Union armies used the

1. Table I. *Virginia and Tennessee shares, 1860*

State of Virginia	23,000 shares	County of Montgomery	390 shares
City of Richmond	1,461 shares	County of Pulaski	159 shares
City of Petersburg	278 shares	County of Wythe	230 shares
City of Lynchburg	5,418 shares	County of Smythe	329 shares
County of Campbell	152 shares	County of Washington	1,413 shares
County of Botetourt	3 shares	County of Floyd	33 shares
County of Bedford	369 shares	County of Grayson	2 shares
County of Franklin	2 shares	County of Scott	1 shares
County of Roanoke	152 shares	County of Tazwell	1 shares
		Others	1,529 shares

total 35, 402, found by the writer in a box labeled "Virginia and Tennessee" in the State Corporation Commission, Richmond, Virginia.

ties for firewood; while depots, bridges, and rolling stock were burned. In April, 1865, the total assets of all the Confederate railroads equalled only one-third of those of 1861. The credit of the three companies declined, interest went unpaid, and mortgages piled up. Their main customer, the Confederacy, paid the lines in bonds and paper currency which had become practically worthless by 1864. In spite of this, the railroads managed to pay dividends fairly regularly.[2]

Regardless of their losses, the railways rendered an invaluable service sustained the South in its cause, and possessed an able leadership who went all out to keep the lines running. The three lines of the Southwest System are described in some detail to prove the truth of the above statement. To-day, the Southside and Virginia and Tennessee are a part of the Norfolk and Western, and the Richmond and Danville is a part of the Southern.[3]

The Southside Railroad Company was chartered in 1846 to provide a line between Petersburg and Cox's Road in Nottoway County. Extensions had made the line 123 miles in length with $3,000,000 capitalization by 1861.[4] A second line of the system, the Richmond and Danville, was chartered in 1848 to build a track from Richmond to Danville. Having obtained several millions in captial in the next decade, the stockholders decided to make an extension through Henry County to make connection with the Virginia and Tennessee.[5] This paid for two more extensions namely, from Keysville to Clarksville, North Carolina, and from Danville to Greensboro, North Carolina.[6]

To satisfy the petitions for a line running through the southwest to the Virginia line, the General Assembly passed an act in 1845 providing for the incorporation of the Richmond and Ohio, which was never incorporated as such.[7] People from beyond Lynchburgh continued to clamor for a railroad since the James River and Kanawha Canal seemed destined never to reach them. The following reasons were cited in favor of such a railway: (1) it would provide large returns to the investors, (2) the line would offer a means whereby the interior could be developed, (3) improvement in trade relations between the interior and the coastal cities would result, (4) the Springs (mineral springs of western Virginia) would be more accessible, (5) foreign capital would be invested in the State, and finally (5) a rail-line toward the Pacific would permit the

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2. The introductory material was taken from C. R. Fish, "The Restoration of Southern Railroads." University of Wisconsin, *Studies in Social Studies*, No. 2 1919; pp. 1-28. C. W. Ramsdell, "The Confederate Government and the Railroads," in *American Historical Review*, XVII, pp. 794-804.
3. *Acts of the General Assembly of Virginia, 1845-1846*, p. 92. (These may be secured from the Virginia State Library, Richmond, Virginia.)
4. *Penny Post* (Richmond), April 11, 1855. Switzler, W. F., *Report of Internal Improvements of the U .S.*, Washington, D. C., Govt. Prt. Office, 1886.
5. *Richmond Whig*, Dec. 14, 1855
6. *Richmond Daily Dispatch*, April 5, 1859
7. *Journal of the Senate, 1845-1846*, Bill No. 2. (These journals may be found in the Virginia State Library.)

tapping of trade of the Far East.[8] M. F. Maury, writing in the *American Railway Journal*, urged the construction of this line in order that Norfolk might be made a great trade center.[9] Shortly thereafter a bill was passed to charter the Virginia and Tennessee with a capital of $2,500,000.[10] The first stretch of sixty miles was let between Lynchburg and Salem.

At the opening of the war, the above mentioned lines were linked together, and were paying dividends to their stockholders. Reports from one rail-line alone show gross receipts of $4,000 a month in 1855 (Richmond and Danville).[11] The stockholders in annual meetings, after hearing the yearly reports of progress and finances, elected officers for the coming year — a president and directors who were in turn to select the superintendents, agents, and other officials needed for the railroad's effective operation.

Personnel

The companies had able leadership under the presidency of such men as William Mahone of the Southside, Lewis E. Harvie and A. S. Buford of the Richmond and Danville, and Robert T. Owen of the Virginia and Tennessee. They held their positions for practically the entire period, and no record has been found of their failure to carry out honestly the jobs assigned or to cooperate with the governments in support of the southern cause.[12] The offices of secretary and treasurer were separated often times. The five directors, three selected by the State and two by the company, met with the president at least monthly. These officials were called up to meet with other railroad officials of the southland in convention during the war.

The next position of importance was that of superintendent of transportation and upkeep. Several outstanding personalities were connected with this job, as H. D. Bird of the Southside, Charles G. Talcott of the Richmond and Danville, and Thomas Dodamead and E. H. Gill of the Virginia and Tennessee, all of whom tried as best they could to keep the lines open and replied constantly to the complaints of lack of service registered with them. Showing the value attached to the work of one of these men, Thomas Dodamead was placed in charge of the properties of the Richmond and Danville in 1865 in order to get it back into operation as fast as possible.[13]

The remainder of the force included as many as 800 men on one line alone — conductors, train drivers, baggage men, mechanics, inspectors,

8. *Richmond Enquirer*, May 2, 1848
9. *American Railway Journal*, Aug, 12, 1848
10. *Acts of the General Assembly*, 1847-1848, p. 184.
11. *Richmond Whig*, Oct. 26, 1849, and Sept. 25, 1856; *Thirty-Sixth Annual Report of the Board of Public Works to the General Assembly of Virginia*, 1851, pp. 5-15. These reports are in the Virginia State Library
12. *Reports of the Board of Public Works*, 1862, p. 142; 1866, pp. 46, 91.
13. Letter dated June 8, 1865, found in a box labeled "Richmond and Danville in the Virginia State Corporation Commission.

carpenters, unskilled help, and the agents stationed at the various depots. Several lists given as examples show that the Richmond and Danville in 1862 had 400 laborers, 50 train hands, 30 carpenters, and 20 blacksmiths;[14] while the Southside had its labor departmentalized in 1866 with 132 in transportation, 60 in machinery, 220 in road, and 2 in executive departments.

The securing of skilled and unskilled labor was a serious problem that did not improve during the war years. Higher wages were demanded. Jobs which paid $1.50 per diem in 1850 now required $3.00 and $4.50. Raids carried off Negros, and conscription took many of the white laborers. The Virginia railroads complained to the State and Confederate governments of the lack of a labor supply. The General Assembly passed an act as early as 1862 stating that "if within 20 days after the draft, the president and superintendent of railroad, canal, and telegraph companies certify certain persons necessary for the operation of the road they might be deferred."[15] The Confederate Congress passed an act in the spring of 1864 exempting from military service a certain number of skilled laborers for railroad duty, with a provision that these men might be called into service if an emergency arose.[16] These measures alleviated the situation very little, however, and advertisements for help appeared in the papers regularly.

Slave labor was employed during the period. These slaves were either hired by the year or purchased from local planters. The cost of hire and keep tripled with the rest of the general price level. The Virginia and Tennessee employeed 500 slaves, and the Richmond and Danville employed 300 in 1862. [17] The General Assembly tried to impress a sufficient supply of slaves into service without much success.

Governmental Regulation

The Virginia Assembly had passed acts in 1836 and 1857 allowing the state to appoint members to the railroad's board of directors and to require the railroads to send annual reports to the Board of Public Works. A further act passed in 1863 required the railroads to transport all soldiers and war materials without requiring legal charge in advance.[18] Certain extensions and consolidations were urged by the state, but neither the Confederacy nor the State interfered with the management or attemped to force certain policies on the lines.

The Confederate government placed railroad supervision under Quartermaster General A. C. Myers, who was to coordinate the roads and see that troops and supplies were carried at special rates agreed upon in the Southern and state railroad conventions. One such convention

14. *Richmond Daily Examiner*, Jan. 22 1862.
15. *Acts of the General Assembly*, 1862, p. 10.
16. *Richmond Daily Dispatch*, Jan. 12, 1864.
17. *Report of the B. P. W.*, 1862, pp. 82, 142.
18. *Acts of the General Asembly*, 1863, p. 38.

brought together the president and superintendent of each line in order, as one newspaper stated, "to serve and promote southern rights."[19] W. S. Ashe was appointed Myers' assistant, and was sent over the railroads on frequent inspection tours. This arrangement failed to work, however, and W. M. Wadley was appointed supervisor of railroads under the Confederate Department of War in December, 1862. Wadley called a conference of the southern railroads to meet in Augusta, Georgia, where an attempt was made to consolidate its lines into a single unit. The superintendents were requested to send in weekly reports to Wadley, who would check over the schedules. This control proved too rigid, and F. W. Sims, who understood the railroad business throughly and tried hard to improve railway equipment, was placed at the head of an Engineering Bureau in June, 1863.[20]

Direct governmental control was always a threat, and the means were provided for in a bill as early as 1861. This failed to pass, but, a convention of that body recommended military control of all lines entering the Confederate capital and the placing of them under a competent supervisor. The governor of Virginia in a speech before the senate in 1863, expressed fear of Confederate control of railroads, and said that he agreed with a federal judge who had declared that no government had any railroad rights.[21] Only, in Feburary, 1865, was there a bill passed allowing the Confederate Secretary of War to place any railroad, canal, or telegraph line under such officials as would be designated to keep them in repair and to operate the lines. All damages inflicted would be met by the Confederate government. Nevertheless, the war was concluded before the act had been enforced. The strongest government control came when the Federal government, having defeated the Confederacy, sequestered the Virginia railroads and turned them over to the Board of Public Works in June, 1865. The Board of Public Works handed them back to the superintendents of the old companies in order to put them in operation as fast as possible.[22]

Extensions

The three lines of the system by 1861 had consolidated their facilities, but each had extensions which still were to be completed. The Virginia and Tennessee had not reached Bristol, while the Richmond and Danville and the Southside lines were seeking out of state connections. The extensions of the Richmond and Danville to Greensboro, North Carolina, is given in some detail. In a secret session of the General Assembly in the fall of 1861, an act was passed urging this extension and if the Company failed to do this requesting the Confederacy to handle the job.[23]

19. *Richmond Daily Examiner*, June 30, 1862.
20. Ramsdell, *op. cit.*, p. 804.
21. *Journal of the Senate*, 1863-1864.
22. *Journal of the B. P. W.*, Book W, p. 140. This may be found in the State Corporation Commission office.
23. *Acts of the General Assembly*, 1861, p. 55.

They went further, and urged extensions and consolidations as rapidly as possible to facilitate the war effort.[24] The *Daily Richmond Examiner* discloses that the above extension was of great military value, and that it should be completed to connect with the North Carolina Central in six months.[25] Conventions were held at Richmond and Reidville demanding this improvement. Ex-governor Morehead of North Carolina was speaker at the first, while at the second it was pointed out that both states had chartered the extension and resolved to request President Jefferson Davis to promote it. [26] Davis in a message before the Congress, favored the extension where considerable opposition was registered.[27] As late as the fall of 1862 this line was not complete as a result of a labor supply shortage, for only 200 Negroes were employed where 2,000 were needed.[28] In the final year of the war the connections remained incomplete. One editor disclosed that railroads were built without a general plan, that the jealousy of cities and the "battle of the gauges" proved the foolhardiness of the builders. He called upon the Confederate government to give heed and correct the situation.[29]

With the coming of peace, Virginia realized the need for completed extensions, and encouraged these measures. A letter of President Owen of the Virginia and Tennessee of June 23, 1865, declared that his line had just been opened as far as Bristol.[30] Furthermore, acts of the Assembly authorized the purchase of the Piedmont Railroad for debt, and extension of the Southside System, and allowed $2,500,000 for a Danville to Lynchburg extension.[31] Therefore, though extensions bogged down during the war, the lines speeded them up with the return of peace.

Equipment

The three companies of the system suffered greatly from the wear and tear of war. At the beginning of the war the Southside Railroad reported a rail line of 123 miles with the equipment listed below in the footnote.[32] The second year, there was only 11 passenger cars and 190 freight cars.[33] The final year only 13 engines pulled 9 passenger and 114 freight cars over its tracks. The line was fortunate enough to secure iron the first

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24. *Ibid.*, p. 64.
25. *Richmond Daily Examiner*, Nov. 23, 1861.
26. *Richmond Daily Dispatch*, Dec. 13, 1861.
27. *Richmond Daily Examiner*, Feb. 8, 1862.
28. *Richmond Daily Dispatch*, Oct. 22, 1862.
29. Richmond Daily Enquirer, Jan. 4, 1865
30. Letter found in box at the State Corporation Commission.
31. *Acts of the General Assembly*, 1865-1866, pp. 319, 334.
32. Table II. *List of Southside equipment:*

Engine house and shops	3	Baggage cars	4
Engines	29	Freight cars	208
First-class pass. cars	10	*Report of B. P. W.*, 1861, p. 289.	
Second-class pass. cars	3		

33. *Ibid.*, 1862, p. 285.

year, but the supply was soon cut off. The Company always complained of too few cars and a scarity of supplies practically unobtainable in the Confederacy.[34]

The Virginia and Tennessee used 27 passenger, 14 baggage, and 290 freight cars over its tracks. In 1862 the number of passenger cars had been reduced to 19. The Federals cut the tracks in a number of places, and in 1865 the V. and T. trains ran only as far as Big Lick. The Confederacy was very desirous of keeping the trains running over the whole line, for it tapped such a large area with many needed war materials. [35] The equipment usuable at the end of the war is included in the table below.[36]

The Richmond and Danville reported the following improvements had been made on its line in 1860. The "T" rails had been laid for 9½ miles, leaving only 8¾ miles of the old flat rails to be removed. The Virginia Assembly had appropriated $350,000 for deepening the James River at the R. and D. wharf in Richmond. A freight office at Richmond, and a boarding house at Clover, had been erected, and four wells had been dug along the rights-of-way. The equipment of the line in 1860 included that mentioned below.[37]

This supply was soon heavily taxed, for by 1863 only 22 engines and 328 cars remained in use,[38] and the year of surrender found it with 25 engines and 161 cars.[39] The president's report told a hard luck story, declaring the situation as to equipment had become increasingly worse. Furthermore, owing to the difficulty of procuring necessary materials, little work had been done during the years 1862 to 1864 in the way of repair. Ditches had not been cleaned, and often water and mud had covered the rails, causing the cross ties to decay. The portion of track between Burkville and Meherrin (11 miles in length) had been laid with strap rails from which engines were thrown frequently. After July, 1865, when the Company had its equipment returned, "T" rails had been laid, a large force was put ditching, 184,958 ties, and 1100 tons of iron had been laid and the Howe trestle had been used where necessary. The new

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34. *Ibid.*, 1866, p. 35; Pres. T. H. Campbell, *ibid.*, 1861, p. 277.

35. *Reports of the B. P. W.*, 1861, p. 71; 1862, p. 93; *Richmond Whig*, July 6, 1865.

36. Table III. *Equipment of V. & T.*, 1866; *Report of B. P. W.*, 1866, p. 83.

Number of engine houses	9	Box cars	170
Number of engines	29	Stock cars	8
First-class pass. cars	13	Platform cars	60
Second-class pass. cars	5	Caboose cars	18
Baggage and express cars	7	Depot cars	12

37. Table IV. *Equipment of R. and D.*, 1860. *Report of B. P. W.*, 1860, p. 91.

29 engines	48 8-wheel box cars
11 first-class pass. cars	34 stock cars
3 smoking cars	21 wood cars
6 second-class pass. cars	2 sand cars
10 mail cars	56 6-wheel iron and coal cars
206 8-wheel box cars	2 gravel and coal cars
19 4-wheel box cars	2 sleeping cars

38. *Ibid.*, 1863, p. 132.

39. *Ibid.*, 1865, p. 161.

trestle work had been placed at Manchester, Rochett's, and Richmond to accommodate the coal business. Depots and water stations had been put up at Keysville, Mossingford, Price's, and Rockfield. The Company had purchased seven new locomotives and forty-one new cars at high prices,[40] and had secured a part of the supply of railroad equipment which the Federal government had sold at auction.[41] As early as July 28, 1865, the 140 mile R. and D. was saying that with its Southside and V. and T. connections it had opened a great southern route via Bristol to Knoxville and Chattanooga of repaired track and replenished rolling stock.

The limitations as to equipment played no small part in determining the effectiveness of the Southwest System in war-times. When the war was concluded the lines, as did their sister lines, the Richmond, Fredericksburg, and Potomac and the Virginia Central, made quick recoveries.

Finances

The problem of finance for the southern railroads had always been serious. All the lines had opened with too small a capital outlay which was increased only when new extensions were allowed. During the war the military engaged more of its time at lower rates, and paid in depreciated currency. Though the companies of the southwest system had been retiring their debt prior to 1861, they found it increasingly hard to pay the interest, to say nothing of the principal. All the while, dividends ranging from 3% to 7% were being declared, which might have been applied to replace the capital spent or pay off its fast accumulating debt.

Of the Richmond and Danville's $3,500,000 capital, the state took $1,500,000. In 1861 the General Assembly allowed the Company to increase its capital by $2,000,000 for the Greensboro extension. [42] As late as 1863 only $2,000,000 of the entire stock had been paid in, with the State owning the major part, 72,000 shares.[43] The State had meanwhile taken $2,300,000 of the $5,000,000 capital of the Virginia and Tennessee. No increase in the V. and T. came until after the war, when the total capital was increased by $2,000,000.[44] The Southside had a capital stock equalling $1,400,000, with the State owning $803,000 worth.[45] By 1866 individuals had purchased $53,000 more new stock of a slight increase which had been allowed. [46]

The total debt of the Richmond and Danville was $1,200,000 plus a bond issue of $65,400 in 1860.[47] Though this was slightly reduced by

40. *Ibid.*, 1866, p. 49.
41. *Richmond Whig*, July 28, 1865.
42. *Journal of the House of Delegates*, 1861, Doc. 8, p. 29.
43. *Acts of the General Assembly*, 1861, p. 60; *Report of the B. P. W.*, 1863 p. 128; a list found in the State Corporation Commission box dated 1866.
44. *Acts of the General Asembly*, 1865, 1866, p. 332.
45. *Report of the B. P. W.*, 1861, p. 284.
46. *Ibid.*, 1866, p. 321.
47. *Thirteenth Annual Report of the Richmond and Danville Railroad Company*, 1860, p. 90.

1863, the funded debt stood at $555,091, and there was a floating debt of $113,733.[48] Bonds to the amount of $2,018,388 raised the total debt by the final year to $2,018,338.[49] The Company paid off the State debt slowly according to the table included below in the footnote.[50]

At the beginning of the war, the Virginia and Tennessee's debt was divided as follows:

Debt due the State	$ 992,030
Debt due to others	2,019,000
Floating debt	618,958
	3,629,988[51]

In 1862 the funded debt equalled $992,030, and the floating debt $485,995 with six classes of bonds in debts due the State, first and second mortgage bonds, salt works mortgages, etc.[52] The total debt equaled $2,231,185 the following year, which was reduced only slightly by 1866.[53]

The total debt of the Southside Company in 1861 amounted to $1,763,750.[54] This was reduced the following year and divided as follows: a $800,000 funded and a $252,613 floating debt.[55] The Company continued to pay off its debt, and as late as 1864 notices appeared in the *Sentinel* to the effect that bonds due January 1, 1865, should be presented to the Petersburg office.[56] The debt was divided thus in 1866:[57] loans from the State, loans guaranteed by the city of Petersburg, and bonds issued to the city of Petersburg, and bonds issued to complete the railroad. Though the railroad made efforts to reduce the debt, it appeared hard to do during these critical years.

As a result of the agricultural depression of 1861, the Richmond and Danville Railroad suffered a decline in receipts from freight which equaled $207,582, a decrease of $113,444 below the figures for 1860.[58]

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48. *Report of the B. P. W.*, 1861, p. 149; 1863, p. 128.

49. *Ibid.*, 1866, pp. 142, 157.

50. Table V, *R. & D. debt. payments.* This record was found in the State Corporation Commission office.

Jan. 1, 1860	$561,442	Jan. 1, 1863	$534,555
Interest	16,843	Interest	16,036
Paid	21,000	Paid	21,000
Jan. 1, 1861	553,004	Jan. 1, 1864	524,479
Interest	15,590	Interest	15,734
Paid	21,000	Paid	21,000
Jan. 1, 1862	554,052	Jan. 1, 1865	513,790
Interest	16,321	Interest	15,413
Paid	21,000	Paid	21,000

51. *Report of the B. P. W.*, 1861, p. 66.

52. *Ibid.*, 1862, p. 88.

53. *Ibid.*, 1866, p. 80; information found in the Virginia State Corporation box.

54. *Report of the B. P. W.*, 1861, p. 284.

55. *Ibid.*, 1862, p. 282.

56. *The Sentinel*, Dec. 31, 1864.

57. *Report of the B. P. W.*, 1866, p. 32

58. *President's Report to the B. P. W.*, 1861, p. 149.

The year following showed little improvement for the earnings and expenses were as shown in the tables below.[59] These figures had improved by 1863, and by 1865-66, though there had been reductions the R. and D's earnings were well ahead of expenses, $661,743 and $341,185 being the figures respectively.[60]

In the case of the Virginia and Tennessee Railroad, no decline in trade was indicated up to July 1, 1861, with gross earnings of $798,928 and expenses of $399,414. Part of its net earnings the Company applied to pay off the debt.[61] From passenger travel $446,979 was received; while the expense account included such items as repair of roadbed, buildings, machinery, operation, insurance, and taxes.[62] The financial conditions for the year following were the best yet, with the earnings double those for 1861.[63] The table of returns is given below.[64] In 1863 the *Sentinel* reported that the Virginia and Tennessee was making net earnings of 56% of its capital.[65] This was a remarkable record for a line to make in one of the most critical years of the war. The able administration and the fact that it contacted such a valuable area were the reasons for such showing. Only in 1866 did expenses amount to $200,000 more than earnings, and this was due to the strained business conditions of surrender and after.[66]

On the Southside Railroad Company the gross earnings of $158,181 of 1861 had increased to $579,958 in 1862.[67] Though inflation had set in by 1863 earnings dropped a third of expenses. The table below shows

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59. Table VI, *Report of the B. P. W.*, 1863, pp. 140, 141.

Receipts for 1862		Expenses for 1862	
Passenger cars	$281,246	Operation	$197,518
Freight cars	175,941	Repairs	32,692
Mail cars	13,845	Maintenance	11,021
Other cars	27,343		
Virginia & Confed.	226,053		241,231
	724,430		

60. *Ibid.*, 1863, pp. 157, 158; *ibid.*, 1866, p. 148.
61. *Richmond Enquirer*, Sept. 14, 1861.
62. *Report of the B. P. W.*, 1861, pp. 77, 81.
63. *Daily Richmond Examiner*, Dec. 5, 1862.
64. Report of the B. P. W., 1862, p. 88.
Table VII, *Earnings for 1862 on the V. & T.*

Passengers	$577,206	Expenses for 1862	
Freight	403,385	Maintenance	$179,629
Mail	35,934	Repairs	95,221
Others	34,690	Operation	187,578
	1,051,215		462,429

65. *The Sentinel*, March 11, 1863.
66. *Report of the B. P. W.*, 1866 p. 85.
67. *Ibid.*, 1861, p. 284; *ibid.*, 1862, p. 282.

this.[68] This condition continued through 1866, when the gross earnings were $289,580 and the expenses $439,693. No wonder the state was ready to sell its shares at the first opportunity; as Governor F. H. Pierpont declared as early as 1865, the state was making little return from its investment in railroads and he advised sale of the stock held by Virginia.[69] At the time, the State owned $22,704,524 worth of shares of stock in this transportation facility of the State as compared to $12,277,290 in navigation, $465,800 in plank roads, $2,674,540 in turnpikes, $11,868,098 in state roads, and $106,100 in bridges in various parts of the State. The railroad investment in 1865-66 seemed none too sound.[70]

Services

The value of the Southwest system to the Confederacy cannot be over emphasized. The railroads served as the best east-west approach to the inland country of the Confederacy. Supplies could be secured from Tennessee and Kentucky as well as from the western and southern areas of Virginia. Doctor Douglas Freeman considered this system one of the main supply lines of the war. A number of the battlefields of the war lay in the area of Southwestern Virginia. The Federals desired to sever the system's connection with the capital. Early in 1861 the Companies had agreed to allow the necessary troop trains to move at the will of the Confederate military comand. The lines authorized President Jefferson Davis and the States to use their men, property, and shops for the manufacture of war munitions, and they accepted Confederate bonds for payment for transportation of soldiers and use of the Companies' equipment.[71] The making of gun carriages was one of the main jobs the shops could effect, and as early as December, 1861, the Richmond and Danville shops had turned out thirty-five such carriages.[72]

To aid the cause, the Virginia and Tennessee as early as 1861, in spite of grain failure, the washing away of thirty miles of track, and small pox epidemics, transported troops and freight at one-half the regular rates.[73] The Company's rolling mill was employed for government use,

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68. *Report of the B. P. W.*, 1863, p. 450:
Table VIII, *Earnings for 1863 on the Southside* / *Expenses for 1863*

Passengers	$491,765	Transportation	$405,488
Freight	318,004	Interest	97,405
Mail	14,456	Taxes	38,649
Express	50,648	Debt	25,700
Rent	5,648	Interest due state	208,500
	880,102		775,742

69. *Journal of the Senate*, 1865, p. 18.
70. *Documents of the General Assembly*, 1865, 1866, doc. 1, p. 25.
71. *Richmond Daily Dispatch*, June 19, 1861.
72. *Richmond Daily Examiner*, Dec. 19, 1861.
73. *Report of the B. P. W.*, 1861, p. 62.

and its salt mines were limited for state use only, though Governor Zebulon Vance of North Carolina requested supplies for his State.[74]

The Southside, in 1861 reported that its main business was the transportation of troops and that the Company had sufficient equipment to do that adequately. Furthermore, their own cars were being manufactured in their own shops, and very few manufactured products were needed from the outside. In 1862 the Southside reported that less equipment was available but that the supply of ties was the best in years.[75]

The military damage and the failure to repair the lines in the 1863-65 period made for inefficiency. In 1864 the heaviest raids of the war came on the rail lines. In May, E. H. Gill, superintendent of the Richmond and Danville, went over the entire system to ascertain damages done by the frequent raids, and discovered a large body (3,000) of Federal cavalry crossing the line and advancing toward the Clover Hill coal pits.[76] Shortly thereafter the Virginia and Tennessee reported that six raids had destroyed the greater part of the depots and bridges (4,000 linear feet), and eighteen miles of track had been torn up in one place. The whole damage was repaired in sixty days at a cost of $600,000.[77] Though the Southside was defended by R. E. Lee, Wade Hampton, William Mahone, and Fitzhugh Lee, bad breaks were made along its line. Freeman declares that by December 20, 1864, the Richmond and Danville's cars and locomotives seemed hardly able to crawl over its rusty and worn tracks.[78] U. S. Grant aimed to cut the Richmond and Danville line as well as the Southside at vital points. By February, 1865, the Danville had been rendered useless, and 80,000 Federals stood ready to tear up the Southside.[79]

One month after Appomattox the lines were being repaired. The Southside under the direction of Superintendent Bird was hiring hands, purchasing timber, and sawing out trestle work.[80] On the Virginia and Tennessee, where only one depot and three bridges were left standing, work was beginning,[81] while the year 1866 found the Richmond and Danville being quite completely repaired, ditched, supplied with cattle guards, crossings, bridges, and depots. The bridge over the Staunton river was finished while a Howe Truss bridge was built over the Little Roanoke river. The Piedmont Railroad's gauge was changed, since the Danville line had leased it for $75,000 annually.[82]

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74. *Report of the president of the Virginia and Tennessee*, June 30, 1863, found in the State Corporation Commission office.
75. *Richmond Daily Dispatch*, Dec. 8, 1862.
76. *Ibid.*, May 13, 1864.
77. *The Sentinel*, Sept. 7, 1864.
78. Freeman, *R. E. Lee*, III, p. 453; IV, pp. 22, 23.
79. *Ibid.*, IV, pp. 75-81.
80. *Richmond Whig*, June 9, 1865.
81. Letter of Pres. Robt. Owen, June 23, 1865, found in State Corp. Commission office.
82. *Report of B. P. W.*, 1866, p. 143.

The rates for passenger fares and for freight remained fairly normal until 1864, when inflation and currency depreciation caused them to double and triple. The fares and freight charges per ton mile on the Southside were 4.06¢ and 4.86¢, while on the Virginia and Tennessee 2.94¢ and 5.3¢ the first war year. The Southside carried 106,047 passengers and 95,664 tons. An analysis of the goods carried is included in the footnote.[83]

In 1862 business improved, and the Virginia and Tennessee reported 194,106 passengers and 67,339 tons of freight.[84] A decline in returns was marked by 1863, and with fares and rates changed by the Richmond and Danville of 3.25¢ and 4.43¢ respectively, their carryings included 240,171 passengers and 186,517 tons of freight.[85]

Charges had increased again by the end of 1863; the Richmond and Danville had doubled theirs; while the Virginia and Tennessee average fare was .04¢ and .08¢ per ton mile for freight.[86] The Board of Public Works had authorized these increases even if the charters had set limitations due to the war emergency.

The legislative act permitting this had allowed the lines to apply in three month's time for such increase, showing needs and allowing the lines as much as 100% increase on express providing the charge was no more than 50% above the railroads' freight charge.[87] The next year the rates were increased further, as the photostat shows.[88] Still, the Southside asked the Board of Public Works to double passenger fares, to increase corn and wheat rates, and to double and triple the others per ton mile.[89] The year of surrender found the railroads operating only part of the year with reduced rates varying from .04¢ to .06¢ with three lines for both pasengers and freight.

The Richmond and Danville carried 2,480 bushels of wheat eastward, as compared with 33,640 bushels in 1866 and 9,365 hogsheads of tobacco

83. Table IX, Southside tonnage in 1864:

Cotton (pounds)	7,894,590	Wheat	18,233,405
Bacon	3,583,906	Flour	3,746,339
Fruits	685,347	Plaster	5,634,734
Cattle	820,944	Salt	801,318
Lumber	718,953	Hogs	2,207,253
Wood	6,675,716	Copper	1,191,757
Leather	88,188	Liquor	1,241,941
Butter	56,993	Drugs	399,252
Corn	2,029,487	Drygoods	1,382,593

Ibid., 1861, p. 59.

84. *Ibid.*, 1862, p. 95.

85. *Ibid.*, 1863, p. 152; *The Sentinel*, April 28, 1863.

86. *Ibid.*, 1863, p. 128.

87. Each railroad had contracts with express companies to haul over their lines for a certain percent of the charges. *Acts of General Assembly*, 1863.

88. Handbill found in the State Corporation Commission files.

89. Letter of Pres. H. D. Bird, July 19, 1864, found in State Corporation Commission file.

90. *Report of B. of P. W.*, 1866, p. 143.

as against 15,063.[90] The Virginia and Tennessee reported a carriage of only 58,344 passengers and 46,247 tons.[91] The Richmond and Danville showed similar small amounts.

Accidents and complaints were registered during the period in the usual numbers. Complaints were sent to the local papers and to the Board of Public Works. A writer stated in a newspaper article that discrimination in charges should be made when supplies were sent by home folks to their sons in government service.[92] The privilege of men in government service being allowed to ride free was abused, and the railroad companies ruled that no official could board a train unless he had a passport signed by President Davis or the governor of Virginia.[93] The city of Richmond requested, during the winters of 1863 and1864, that the system apportion more flat cars for wood hauling for fuel. The lines replied that they had no extra cars to apportion.[94]

The schedules of 1862 show the Richmond and Danville mail train reached Danville at 7 A. M. and connected at Burkville with the Southside at 3:10 P. M. for Petersburg and Norfolk.[95] The Southside left Petersburg daily at 7 A. M. to reach Lynchburg at 2:15 P. M.[96] As a military precaution during the war, few if any schedules were published. The first line to resume a regular schedule was the Richmond and Danville, when it published in October, 1865, a notice that a train would leave Richmond at 8 A. M. to return at 4:30 P. M. and 6:35 P. M.[97]

A railroad convention was held in Richmond on May 16 and 17, 1866, where the lines adopted a time table, agreed on through tickets, a uniform system of handling baggage, and postal rates.[98] These steps spoke of advancement in the post-war years.

Summary

This is the story of how three railroad companies forming a system, every mile of which lay in the battle zone, carried on in wartime, fed men and material to the Confederacy, and carried on business in spite of loss of rolling stock, depreciation, and inflation. This was done without any major disputes among the lines of the system or any direct governmental control. Instead, under its own management it succeeeded in chalking up dividends for its stockholders, and was a means by which the Southern forces were enabled repeatedly to succeed in the campaigns of the Upper South. When the end came, the railroads under wise leadership were rebuilt quickly for service in building the New South.

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91. *Ibid.*, pp. 37, 83.
92. *Richmond Daily Dispatch*, Aug. 2, 1861.
93. *Richmond Whig*, July 16, 1861.
94. Letter dated Nov. 28, 1862, found in the State Corporation Commission files.
95. *Richmond Enquirer*, Jan. 1, 1861.
96. *Ibid.*
97. *Richmond Daily Enquirer*, Oct. 30, 1865.
98. *Proceedings* of a railroad convention in Richmond May 16-17, 1866, Norfolk, Virginia, Norfolk Printing House, 1866.

Railroad Paper Money

Many of our members realize that the charters of some of our earliest railroads including the privilage of banking and the issuance of paper money. During the Civil War, some of our Southern railroads also issued fractional currency, due to the scarcity of specie.

In connection with their courses on Money and Banking, Dr. Cole, Librarian of the Baker Library, has built up a fine collection of paper currency. This includes the paper money issued by the different railroads. We are publishing a list of these notes in their collection. First, it will serve as a check list of the roads that issued this currency for those that may be interested. Secondly, Dr. Cole is anxious to increase their collection. If any of our members have any of this paper money that they are willing to part with, either by gift or by sale, Dr. Cole would appreciate being advised in the matter. Unless your specimen is in better condition than those listed, he would be interested only in roads other than those shown on the attached list.

Name	City and State	Date	Denomination	Condition
The Atlantic & Gulf Rail Road Company	Savanah, Georgia	1847	Two dollars	good
Baltimore and Ohio Rail Road Company	Baltimore, Maryland	1841	Twelve and a half cents	fair
Brunswick & Albany Rail Road Company	Brunswick, Georgia	1871	Two dollars	fair
Champlain & St. Lawrence Rail Road	Montreal, Canada	1837	Seven pence half penny	good
Champlain & St. Lawrence Rail Road	Montreal, Canada	1837	Seven pence half penny	good
Champlain & St. Lawrence Rail Road	Montreal, Canada	1837	Fifteen pence	good
Champlain & St. Lawrence Rail Road	Montreal, Canada	1837	Fifteen pence	good
Champlain & St. Lawrence Rail Road	Montreal, Canada	1837	Half a dollar	good
Champlain & St. Lawrence Rail Road	Montreal, Canada	1837	Half a dollar	good
Champlain & St. Lawrence Rail Road	Montreal, Canada	1837	Half a dollar	mint
The Erie and Kalamazoo Rail Road Bank	Adrian, Michigan	1853	One dollar	poor
The Erie and Kalamazoo Rail Road Bank	Adrian, Michigan	1853	One dollar	poor
The Erie and Kalamazoo Rail Road Bank	Adrian, Michigan	1853	Two dollars	poor
The Erie and Kalamazoo Rail Road Bank	Adrian, Michigan	1853	Two dollars	poor
The Erie and Kalamazoo Rail Road Bank	Adrian, Michigan	1853	Five dollars	poor
The Erie and Kalamazoo Rail Road Bank	Adrian, Michigan	1853	Five dollars	poor
The Erie and Kalamazoo Rail-Road Company	Toledo, Ohio	18—	Twenty-five cents (No. A.)	good
The Erie and Kalamazoo Rail-Road Company	Toledo, Ohio	18—	Twenty-five cents (No. B.)	good
The Erie and Kalamazoo Rail-Road Company	Toledo, Ohio	18—	Fifty Cents	good
The Fort Wayne & Southern Rail Road Company	Muncie, Indiana	1854	Five dollars	mint
The Mississippi Central Rail Road Company	Holly Springs, Miss.	1862	Twenty-five cents	mint
The New Orleans, Jackson & Great Northern Rail Road Company	Canton, Mississippi	1862	Three dollars	good
New York & New Haven R. R. Co.		1862	Five cents	mint
The River Raisin & Lake Erie Rail Road Company	Monroe, Michigan	1863	Three dollars	fair
Selma, Marion and Memphis Rail Road Company	Marion, Alabama	1871	Twenty-five cents	mint
Selma, Marion and Memphis Rail Road Company	Marion, Alabama	1871	Two dollars	mint
South Carolina Rail Road Company	Charleston, S. C.	1873	One dollar	fair
The Southern Railroad Co.	Vicksburg, Mississippi	1861	Twenty-five cents	fair
Tennessee Coal and Rail Road Company		——	Five cents	mint
The West Feliciana Rail Road Company	Woodville, Mississippi	1862	Two dollars	fair
The Western & Atlantic R. R.	Atlanta, Georgia	1862	Fifty Cents	poor

NEW BOOKS

MEN OF ERIE

MEN OF ERIE. *By Edward Hungerford,* (New York: Random House, 1946. xiv — 330 pp. Illustrations, maps, bibliography, and index. $3.75.)

MEN OF ERIE is a warm, informative, and shrewdly penetrating account of a great railroad brilliantly written by the nation's foremost biographer of the industry. The book is sympathetic — not at all in a sentimental way — but in its keen understanding of the human element that is the core of a vigorous, living organization. It is informative not only because it sets out more than enough facts to enable one to understand the Erie but particularly because these facts are put into perspective in a masterly fashion; the story emerges in sharp focus and in full color. Finally, the author has brought the great wealth of his experience and the full powers of his keen observation to bear in commenting on those intangible combinations of ideas and ideals that constitute the "railroad way" — and more particularly the "Erie way" — of doing things.

There are many things that this book does not attempt to do, a fact that might well be left unmentioned here were it not inevitable that someone will point out alleged sins of omission. MEN OF ERIE does not pretend to be an exhaustive, final, or scholarly account of the Erie Railroad. On no one topic does it give all the available information; such an undertaking would require not one but a dozen volumes. Nor does it in every case carry to completion an event mentioned in part or in passing. And since the book is not a reference work for scholars, it contains practically no documentation or other scholarly apparatus. For the benefit of those interested in further research, however, Mr. Hungerford does refer, frequently and with appropriate respect, to E. H. Mott's classic treatise on the Erie's first half century, and to C. F. Adams' celebrated "Chapters of Erie." Furthermore, there is a small but useful bibliography which includes a reference to the Erie's voluminous source archives*. MEN OF ERIE is a commentary; it is a summary and sampling, an interpretation of the *character* of a railroad. And only as such should it be judged.

*In December, 1946, seven historical groups known jointly as the Cooperating Groups in Railroad History sponsored an inventory of Class I railroad source archives. The Erie Railroad has reported that its corporation records, extending from 1832 to date, are located in the Secretary's office, Midland Building, 101 Prospect Avenue, N. W., Cleveland 15, Ohio, and that "trained historians who are carrying on serious research" may apply for access to these records to Mr. G. B. Townsend Secretary and Treasurer, Erie Railroad, at the above address.

The unifying theme of this volume is the impact and significance of the human element in the Erie. "Remember," writes Mr. Hungerford, "that any railroad is about as good as the men who constitute it; rarely better," (p. 328) hence the story revolves about the men who have served Erie, "some faithfully, others faithlessly." (p. ix). But, as he shrewdly adds, since the attitude of any railroad employee is generally a "direct reflection" of the character of the person at the very top of the organization (p. 268), emphasis is directed to the presidents who successively guided the destinies of the company. Yet not all those who left their mark occupied this lofty post; some were engineers and builders, others division superintendents — the "kingpins in the operation of the American railroad" (p. 270); others nameless among the legion who kept tracks open and trains moving over the decades. Nor does the author forget that frequently the high quality of good railroading "crosses to the distaff side." (p. 311).

It is one of the virtues of this book that this emphasis on the human element never degenerates into sentimentality or undiscriminating adulation. Mr. Hungerford gives each man his due for his positive contributions: Eleazer Lord for his vision, Benjamin Loder for his unflagging energy, Fred Underwood for his daring innovations, and so on. And occasionally, as when he recites certain solid achievements of Jay Gould, he quite properly qualifies the sweeping damnation popularly attached to this man or that. But he is equally candid in his criticisms. Lord's stubbornness in insisting on a six-foot gauge is roundly denounced, Watson's financial stupidity receives short shrift, there is no attempt to justify the devious deviltries of the notorious Drew-Fisk-Gould trio, and even Fred Underwood of recent memory is criticized for overlooking the question of morale in employe relations and for staying too long on the job. Nor are these estimates purely objective. Mr. Hungerford rests his individual judgments on a wealth of evidence, and he adheres faithfully to a uniform criterion: the ultimate good of the entire living organization. As a result, the railroad emerges with a personality of its own, greater than any of its individual components, and more revealing for an understanding of the Erie than any amount of inanimate statistics.

The first third of MEN OF ERIE (pp. 1-122) carries the story through the completion of the main stem from the Hudson to Lake Erie in 1851. On a generously wide canvas Mr. Hungerford in broad strokes fills in the social, political, and economic background of the quarter century between the completion of the Erie Canal and of the railroad. More could have been recorded as some will quickly point out, but enough *is* there to provide proper perspective to the central figures. The coloring is brilliant without becoming garish. Like almost every other pioneering railroad, Erie had its share of visionaries, its hard-headed planners, its scoffers, and its traitors. And like most roads that were translated from enthusiasm to fact, Erie survived because of the grim determination of leaders who refused to admit the impossible, and workers who stuck to their job not because it was the reasonable thing to do but because they were devoted

to it. Throughout this portion of the account, the author makes frequent asides to emphasize such landmarks as the introduction of telegraphic train dispatching and of organized milk handling by rail. Similarly he often pauses to comment on the status of the industry as a whole, or on the relevance of some forgotten fact or practice to modern operations; this helpful procedure weaves the story into its chronological and environmental framework, and adds immeasurably to the usefulness of the volume.

The second ninety pages (pp. 123-210) covers the struggles of the youthful road from 1851 to 1901. They include accounts of the construction of the principal branches, the early Strike of '54, the regime of Drew and Gould, the bankruptcy of '74, the development of the Atlantic and Great Western, and the story of the road in the last 25 years of the Nineteenth Century. By far the most brilliant and original contribution of these pages is the straight-forward, balanced account of the Drew-Gould administration. Their weakest point is the sketchy condensation of the story for the years 1874-1901 into ten pages; I suspect Mr. Hungerford found these years rather dreary, as they undoubtedly were, but they should receive more attention.

The third major section of MEN OF ERIE (pp. 211-268) carries the life history of the road through the invigorating administration of Fred Underwood (who served as president from 1901 to 1927), the period of Van Sweringen control (1927 to 1938), the recent reorganization, and on into the current administration of Robert E. Woodruff. Mr. Hungerford's penetrating sketches of Underwood, Bernet, and Woodruff are done in his best manner; he has the gift of making his characters live and breathe without in the least compromising his own honest opinion of them. The account of the tortuous but highly successful reorganization is well and simply told.

The last sixty pages of this book include what in reality are four separate essays designed to emphasize the kind of job the modern Erie performs. The first entitled "Modern Railway Operation" is a shrewd and enthusiastic account of the Erie's personnel program; the second is the professional and thrilling story of a fast freight train's trip over the line; the third reveals the intricate and delicate operations of the New York terminal area, and the last describes the Erie's important role as a carrier of fresh foods to the New York market. The author's first-hand knowledge of railroading, his journalistic skill, and his "feel" of the subject combine to make these chapters among the best in the book. He concludes with brief but appropriate expression of faith in the human qualities that make a railroad great.

MEN OF ERIE contains 30 pages of well-chosen, informative illustrations as well as numerous historical woodcuts throughout the text. There is a stylized system map on the inside covers, and seven special maps to illustrate specific points. A helpful chronological list of Erie presidents precedes a short but (for a book like this) adequate bibliography. The index is extensive and accurate.

This is a book that everyone who seeks to understand not only the Erie, but America and that elusive "American Way" should read.

RICHARD C. OVERTON
Northwestern University

EDITOR'S COMMENT

Altho' this book was reviewed in our Bulletin No. 70, the fine comprehensive review of Dr. Overton has been placed in this bulletin to commend the author for an interesting biography of the Erie Railway and the men that guided its destinies.

With Christmas not far distant, the following books have been received, reviews of which will appear shortly.

"Railroading from the Rear End," by S. Kip Farrington. Published by Coward-McCann Co., price $5.00.

"Transportation Under Two Masters," by Charles D. Drayton. Published by National Law Book Co., Washington, D. C., price $3.00

"Henry Meiggs — Yankee Pizarro," by Watt Stewart. Published by Duke University Press, Durham, N. C., price $4.00.

"Grand Central," by David Marshall. Published by Whittlesey House, McGraw-Hill Book Co., Inc., New York, N. Y., price $3.50.

"Mixed Train Daily," by Lucius Beebe. Published by E. P. Dutton & Co., New York, N. Y. price $12.75.

MIXED TRAIN DAILY

A Book of Short-Line Railroads.

By *Lucius Beebe* with photographs by *Charles M. Clegg, Jr.*, and the Author, E. P. Dutton & Co., 1947, xiii — 368 pp. illus. $12.75.

When Lucius Beebe sets out to build an imperishable artistic and literary monument to one of his many hobbies — as he has obviously attempted in his MIXED TRAIN DAILY — the result is not only awesome to behold, but impossible to appraise in general terms. This is one of those rare books that is intensely appealing in some respects and woefully disappointng in others; whether you think it worth the $12.75 at which it is priced will depend wholly on your individual interests and tastes as well as your ability to digest exotic literary fare.

The greatest service that this book performs is to record for all time, principally through its photographs and to a lesser extent through its text, the *Character* of the American short lines as a national institution. This job is well — and at times exquisitely — done. As Mr. Beebe suggests, the short lines are symbols of the simpler unhurried days of the past, they are personal representatives of the towns and countryside they

serve, and self-respecting reminders of the fact that even our great systems of today began as the humble handiwork of a band of typically independent Americans who were willing to bet their sweat, blood, and money that a railroad could and should be put where they wanted to put it. As such, the short lines are as truly American both in form and spirit as the covered wagon, the Yankee Peddler, or the western cowboy, and of equal if not greater importance. Messrs. Beebe and Clegg have performed a real service in fashioning a living memorial to that fact.

Happily for all concerned and quite apart from their symbolic significance, short line railroads, as this book abundantly proves, are extraordinarily photogenic. For one thing, their intrinsic individuality "sticks out like a sore thumb" so that almost any camera shot will catch a locomotive or car the likes of which exist no where else; there is far more resemblance between the high-iron varnishes of the Espee and Reading, for example, than between the closest short-line neighbors. But this is not a book or just "any camera shot." For superlative artistry, the photographs of MIXED TRAIN DAILY, so far as this reviewer knows, have never been equalled or even approached. They are representative both as to regions and types of equipment, pleasingly varied as to angle and scope, and amazingly natural. There is not a trite shot in the lot; every one of them appears unposed and, consequently, completely life-like. They would bring home a "feel" of the subject even if there was not a single caption or word of text. For the collector of railway pictures, this book is a "must" indeed.

For the railway fan and historian, the value of MIXED TRAIN DAILY is something of an open question. The authors purport to be interested in every independent short line in the nation, and more particularly in all the 300-odd members of the American Short Line Association, as well as two branches of larger systems. And a glance at the full and accurate index would suggest that at least passing attention has been given to most of these roads. This attention, however, is far from evenly divided as a brief summary of the contents indicates. Chapter One is an informative and well-written account of the wood-burners, with special attention to the Live Oak, Perry and Gulf. There follows a chapter on the 20-odd Georgia short lines with considerable background information, particularly about the Wadley-Southern, the Sylvania Central, and the "Pidcock Kingdom." Chapter Three includes miscellany relating to Virginia, Tennessee, and North Carolina with appropriate reference to the fabled "Tweetsie"; Chapter Four is devoted to Arkansas, and is one of the best essays in the volume. The mecca of railway fans, Colorado, receives rather detailed treatment in the following chapter; the authors' excursion on the Rio Grande Southern is a minor journalistic masterpiece. Chapter Six recalls principally the splendors of the Virginia and Truckee, and is succeeded by workmanlike accounts of the Carson & Colorado and the Midland Terminal. Chapter Nine, esoterically captioned "In the Fields of Asphodel", scoops up more than a score of scattered lines such as the Frankfort & Cincinnati, the Bath & Hammondsport, the "Ma and Pa",

and the St. Johnsbury and Lake Champlain. There follows an excellent chapter devoted mostly to types of equipment used by the short lines, and the volume ends with a gag essay on cabooses. Countless lines, of course, are brought in where it has seemed most appropriate. Quite comprehensibly, Mr. Beebe has apparently attempted to make a representative summary of his subject. To do otherwise would have expanded his book beyond practical proportions. About some roads he has a great deal to say; about others an oblique reference suffices. In respect to no road is there a complete story. Hence the reader must not expect to find anything approaching systematic histories or even integrated thumbnail sketches of any particular lines. There is, to be sure, a thin core of historical information, but most of it is too fragmentary to be significant, and there are a number of outright errors, such as locating the junction of the Savannah & Atlantic and Sylvania Central at Waynesboro instead of at Sylvania (p. 41), calling the Burlington line at Littleton, Colorado, the "Forth Worth and Denver Division" instead of the Colorado & Southern (p. 129), placing Harriman's death in 1913 instead of 1909 (p. 168, and titling a baggage car that was obviously built about 50 years ago belonging to the 'thirties (p. 314). More disappointing are the sweeping generalizations, particularly in the Foreword, that would hardly stand the test of historical scrutiny. On the other hand, the four maps (of Georgia, southwest Colorado, western Neveda, and the Sumpter Valley Railway) are superb; it is too bad more were not included. And the glossary of terms in the back of the book is likewise a constant help, particularly to the uninitiated reader.

Most of the text, however, is descriptive or anecdotal, and includes a great many accounts of the authors' own peregrinations. These last give something of a "conducted tour" aspect to the volume and are agreeable enough except when Mr. Beebe sees fit to air his rather puerile annoyance at such inevitable things as an unartistic village, a poorly kept small-town hotel, or an understandably boisterous bunch of GI'S. His repeated jibes at Archie Robertson are both ungracious and wholly irrelevant. And probably most readers know how expert Mr. Beebe is as a judge of good wine and food without being rather constantly reminded of the fact. But aside from these foibles and errors, the text — so far as subject matter is concerned — does add considerably to the characterization of the short lines so ably presented in the photographs. On balance, the book is probably a good investment for the fan, and probably not for the historian.

For the reader seeking good literature this reviewer, at least, would warn him to shun this elaborate volume like the plague. Mr. Beebe's baroque, synthetic language and his alternately pompous and saccharine style defy every known canon of simple, clear writing. It would seem that no possible appeal to the necessity for color or atmosphere could justify the stilted and painful phrases of the text. Consider, for example, this excerpt from the foreword: "Regret for pasing of the primal simplicities of the steam railroad is no postured languishing for the *temps jadis* of the poet; it is a regret that the fussy devisings of men, forever enlarging

and perfecting yesterday's folly in favor of new and more fearsome complexities of inconvenience did not cease its search for frustration when, for one moment in eternity, it chanced upon a machine once useful and beautiful." (p. 4) It is bad enough to run across such obscure words as desmesnes, paradigm, sarabands, beldames, termined, panache, simulacrum, picaresque, oenophilists, latifundia, and ormulu; it is even worse to encounter such pure inventions as "ferrophilia" (p. 82), "viastructure" (pp. 116, 241), "fencements" (p. 255), and ferrocide" (p. 259). The confusion is not unlike the wreck described by the author as "a farrago of twisted rails and macerated ties." (p. 153). Mr. Beebe doubtless realizes that his prose does not possess for every ear enchantments it has for its author, so perhaps it is best to give up trying to argue over a matter of taste. This reviewer, however, finds it difficult to sit idly by when his favorite language is subjected to such obvious torture; in his humble estimation, the literary contortions of MIXED TRAIN DAILY detract seriously from its over-all value.

As an example of the book-maker's art, this volume leaves little to be desired in external appearance. It is attractively bound, clearly printed, and on excellent paper. It would be somewhat easier to read if text and pictures were segregated, and of course the first edition inevitably has its share of typographical errors (such as the misspelling of Perditas, Alpena, and Johnson). Assurance has been given, however, that these oversights, as well as proven errors of fact, will be corrected in the subsequent editions now being contemplated.

MIXED TRAIN DAILY, as indicated at the outset, is very much of a personal monument to an institution sincerely loved by Messrs. Beebe and Clegg. It is significant in providing a permanent record of something thoroughly American, and its photographs reach a pinnacle of artistry. If it is less successful as a work of history and literature it must be remembered that a subjective eulogy must be taken as it is with no questions asked. Let your own tastes be your guide.

RICHARD C. OVERTON
Professor of Business History
Northwestern University

Worth Reading

(Compiled by Elizabeth O. Cullen, Reference Librarian, Bureau of Railway Economics, Association of American Railroads, Washington 6, D. C.)

— Books and Pamphlets —

Car Builders' Cyclopedia of American Practice — 1946 — Definitions and typical illustrations of railroad and industrial cars, their parts and equipment; cars built in America for export to foreign countries; descriptions and illustrations of shops and equipment employed in car construction and repair — 17th edition, compiled and edited for the Association of American Railroads — Mechanical Division. Editor, Roy V. Wright. 1444 pp. incl. illus., diagrams, tables, and bibliographies. Published by The Simmons-Boardman Publishing Corporation, New York 7, N. Y. $6.00. " . . . Many new designs of cars and appliances . . . have been made since the publication of the previous edition (in 1943). These have been included as far as possible in order that this Edition might contain the latest practices in American Car Construction and Equipment . . . " (Foreward, p. 4).

Le Centenaire des Chemins de Fer Suisses, publie par la Direction Generale des Chemins de Fer Federaux, Librarie Payot, Lausanne, Switzerland. Cover-title in color, 159 pp., 75 illustrations and 8 reproductions of paintings in color. May be purchased thru book importers in the United States for about $1.40. A detailed history of the construction, extension, operation and traffic, and war organization of the Swiss Federal Railways 1847-1947.

Directory of Industries — also Historical and Statistical Data — Illinois Terminal Railroad Company, compiled by Elmer E. Kester, passenger traffic manager, Springfield, Illinois, April 1947. 136 pp. incl. illus. and maps: Illinois Terminal R. R. Co., p. 24; KNOW YOUR ILLINOIS, p. 56. Available on request to Mr. Kester, or to H. G. Powell, vice president, 710 N. 12th Blvd., St. Louis 1, Mo. Includes: *A short history of the Illinois Terminal Railroad Company,* 1895-1946, pp. 25-27; *List of facilities of cities and towns on the I. T. R. R. Co., located in Missouri and Illinois,* pp. 37-55; *Historical and statistical facts concerning some of the leading cities in Missouri and Illinois served by the I. T. R. R. Co.,* pp. 57-79. *A Note About Sources,* p. 2.

Four main line railways of Great Britain—past, present and future: in peace and in war, by C. E. R. Sherrington. pp. 119-135 reprinted from Schweizerische archiv fur verkehrswissenschaft und verkehrspolitik, Zurich, Switzerland, 2. Jahrgang Nr. 2, 1947. price not stated.*Postwar and future,* pp. 132-133. Resume in German and in French, pp. 133-135. Price not stated.

International rail transport, by Sir Ralph L. Wedgewood, assisted by J. E. Wheeler. xii, 162 pp. Issued under the auspices of the Royal Institute of International Affairs by the Oxford University Press, London, New York and Toronto. 10 shillings 6 pence. The 5th volume in the Chatham House series on International Transport and Communications. *The future of international rail transport*, Chapter XII. *Note on sources*, pp. 144-156.

Odrodzenie Polskiego Kolejnictwa — 1947, prepared and published by the Polish Ministry of Communications, Warsaw, Poland. 165 pp. incl. tables. Describes technical, organizational and other problems of reconstructing Polish railway services and how they have been solved as far as possible. Price not stated.

Presidential vetoes of rivers and harbors bills, by C. S. Duncan, Association of American Railroads, Washington 6, D. C. cover-title, 22 proc. 1. Available on request to the A. A. R. Printed in Railway age, v. 122: 494-497; March 8, 1947, under title: Evolving policy on waterway subsidies — Nineteenth-century presidents' constitutional objections to federal expenditures for local internal improvements never conclusively disposed of.

Railroad men and wages, by J. Elmer Monroe, assistant director, Bureau of Railway Economics, Association of American Railroads. 155 pp. incl. tables and charts. Published by Bureau of Railway Economics, July 1947 and available an request as long as supply lasts. Includes: *Ch. I. Organization of Railroad Employees; Ch. II. How Railroad Employees Are Paid; Ch. IV. General Wage Changes in the Railroad Industry since 1920; Ch. V. Wages of Railroad Employees and Workers in Other Industries; Ch. VIII. Magnitude of Railroad Employment and Payrolls; Appendix K. - A selected list of references.* " . . . necessarily limited to articles and references utilized in the development of the information and data contained in this book. . . . "

Railroad wages and labor relations 1900-1946—an historical survey and summary of results, by Bureau of Information of the Eastern Railways, Grand Central Terminal, New York 17, N. Y. viii, 351 pp. incl. tables, charts. Available on request as long as supply lasts. " . . . The publication is compiled and edited under the supervision of the Executive Secretary of the Bureau, Harry E. Jones, who has been associated with all concerted wage movements involving the Eastern Railroads since 1910. . . " (Preface, p. iii)

The Road of the Century — the story of the New York Central, by Alvin F. Harlow. 447 pp. Illus., ports, facsim. End-paper maps: The New York Central System, 1947. Published by Creative Age Press, Inc., New York City. $4.00. Bibliography pp. 430-439.

The Santa Fe Trail — a chapter in the opening of the west, by the Editors of LOOK. 271 pp. incl. illus. and ports. Published by Random House, New York City. $3.50. Map: The Santa Fe Trail, pp. 66-67. Acknowledgements, p. 268. Picture Credits, pp. 269-271, shows source of

each of the pictures and cartoons. *Introduction — The West Today*, pp. 9-23, mentions: "... so much has sprung from so little .... On the twelve following pages is a pictorial impression of the West today. Against this backdrop the achievement of the trail-breakers can be seen in magnificent perspective ...." *Part II, Ch. 4 — The Railroad Comes.*

South African—American Survey—1947, edited by Henry M. Moolman, director, Union of South Africa Government Information Office, 500-5th Ave., N. Y. 20, N. Y., and available on request to Mr. Moolman. cover title, 129 (5) pp. incl. illus. and maps. *South African-American trade development*, pp. 22-26. *South African Railways and Harbours*, pp. 64-67, 69. *The growing market for American goods in South Africa*, by E. Jerome Webster, Washington, D. C., pp. 72, 75.

The South American Handbook — 1947 (24th annual edition). A year book and guide to the countries and resources of South and Central America, Mexico and Cuba, edited by Howell Davies. lxix, 785, (20) pp. Published by Trade and Travel Publications Ltd., London, E. C. 3, England. For price apply to your book importer. Describes rail services in each country, as well as travel in and routes to each country.*Railways of Latin-America*, pp. 755-767, lists by names, with mileage, gages, areas served, and headquarters, the railways in each country.

State Management and Control of Railways in India-a-study of railway finance, rates and policy during 1920-1937, by L. A. Natesan, professor of economics, The Scottish Church College, Calcutta. xxiii, 496 pp. Published by University of Calcutta Press, Calcutta, India. Book importers' price in U. S. A. $5.28. Foreword by Sir Ralph L. Wedgwood, pp. vii-ix *see* (Indian and Pakistan Railways) in Articles in Periodicals in this list for latest available data.

This Fascinating Railroad Business — 3rd edition — revised 1946, by Robert S. Henry. 511 pp. Illustrated. Published by The Bobbs-Merrill Co., Indianopolis, Ind. and New York City. $4.00. *An "Anatomy" of American Railroads — (Class I railroads, including switching and terminal companies, and their inter-corporate relationships)*, pp. 467-497. *Acknowledgements*, pp. 498-499.

The Transport Situation in Europe. (Report) No. 20 — May 1947 (Special Number), by European Central Inland Transport Organisation, Paris, France. 62 pp. Editor's note, p. 2, mentions: "Because of the approaching end of the activities of ECITO, this is the last number ... which will be issued ... As a final summing up of the information and articles contained in previous issues, this number contains three general articles: one on the principal accomplishments of ECITO, one on the state of transport in Europe in mid-June and one on the restitution of railway rolling stock ... " It also contains an index to the 20 reports issued. Its price is 5 shillings, and since the headquarters of ECITO at 19, Avenue Kleber, are closed, copies probably may be purchased thru book importers in this country.

Transportation in America, by Railroad Committee for the Study of Transportation, Association of American Railroads. (6), 391 pp. Pub-

lished by and available on request to Association of American Railroads, Room 802 Transportation Bldg., Washington 6, D. C., as long as supply lasts. "This volume constitutes the final report . . . " (Introduction, p. 1). Reports listed in Appendix B. 372-383: " . . . a total of 160 reports . . . Most reports were published only in small mimeographed or planographed editions, for distribution to railway executives and others within the railway industry. Those which for various reasons were printed for wider circulation are prefixed in the list by asterik . . . "

— Articles in Periodicals —

. . . *Congreso Panamericano de Ferrocarriles—su organizacion* (for the 6th Congress in Havana, Cuba, February 1948). Boletin de la Asociacion Permanente, Congreso Panamericano de Ferrocarriles, Buenos Aires, Argentina, No. 100, Marzo-Abril de 1947, pp. 23-24.

Dress Parade on Rails, by Clifford B. Hicks. Popular Mechanics Magazine, June 1947, front cover and pp. 97-104, 252. " . . . More than 100 new streamliners soon will roll between the nation's cities. Many are on daily schedules already . . . —they're luxury liners on rails. . . . In the near future the most revolutionary changes will be in locomotive power." Illustrated.

Ferrocarriles de Mexico. Ferronales, Mexico, D. F., April 1947 — A feature of Ferronales, containing current information on developments, historical articles and editorial "reminders" of the relation of railroads to the economic and social needs of Mexico. Historical articles include:

El Ferrocarril del Sureste, by Jose G. Escobedo. May 1947, pp. 4-5;

Los Servicios Diesel de los N. de M. April 1947, pp. 3-5;

El Ferrocarril Mexicano, by Porenzo Franco, June 1947, pp. 19-26;

Historia Futuro del F. C. Interoceanico, by Miguel A. Quintana, p. 17-21;

La Mexicanizacion de Nuestros Ferrocarriles, by Jose Maria Benitez. August 1947, pp. 14-23. All historical articles are illustrated.

Freight Progress Annual — 1947. Railway Age, May 17, 1947. Its v. 122: 971-1062 and 264 advertising pages carrying out theme. *Thoroughbreds of the Freight Fleet — "Overnighters" Offering First-Morning Delivery Over a 300-Mile Range,* p. 997.*Freight-Car Program Gets Slow Start — After much pressure and grinding of gears steel is promised (1) for program of 7,000 cars a month and (2) for 10,000 cars a month — So far rate is under 3,000 a month,* pp. 1024-1028, 1033. "Chronology" begins on p. 1024, with*The Theme Song* that began on Dec. 30, 1946 at a press conference of Col. J. M. Johnson, director, ODT on steel for railroad cars. New England Shippers Advisory Board's cartoon answer to questions: "Why can't you get cars to load? What can be done about it?" reprinted on p. 1024. Tables: Freight-train cars on order . . . May 1, 1947, pp. 1026-1027.

General Motors "Train of Tomorrow" is on Exhibition Tour — New equipment is attracting wide attention because of many innovations in design including the Astra Dome. Railway Age, July 26, 1947, pp. 73-80 (149-156). Illustrated. " . . . According to original plans, the train will be exhibited at various cities throughout the country for a period of about six months, following which it will be available for purchase and use by any railroad interested. . . . a four-car Astra Dome train which includes an Electro-Motive 2,000-hp. Diesel locomotive, one chair car, one sleeper, one dining car and one observation-lounge car . . . "

Getting History Right on Railroads — Carriers have suffered from a stereotyped picture of them as "robber barons," but this distorted view is being corrected, by Dr. Richard C. Overton, professor of business hisory, Northwestern University. " . . . An even wider variety of approach and interest was represented by the 'Bulletins' of the Railway & Locomotive Historical Socitey. . . . " p. 48 (202). Reprints of this article were distributed to its members by The Lexington Group, in its letter of Sept. 5, 1947.

The History of the St. Louis Southwestern Railway Lines, Chapter 1 — by J. E. Anderson. Cotton Belt News, St. Louis, Mo., January — March; April — September 1947; to be continued. Illustrated. ". . . The first link in the now imposing system was the Tyler Tap Railroad . . . "

(Indian and Pakistan railways — some recent articles in The Railway Gazette): (1) . . . *India — railway organization in Pakistan — partition of Indian railways — General managers' conference. In* Overseas Railway Affairs, July 18, 1947, p. 64, with editorial comment: *Whither Indian Railways?* p. 61, mentioning: " . . . we already know that within the next few weeks there will be two self-governing Dominions in the peninsula, Hindu India and Moslem Pakistan, as well as some independent Indian States . . . " Map of India before partition.

(2). Partitions of the North Western Railway of India — An outline of the policy now being adopted for the division of the system into two new railways, the new N. W. R. (5,200 route-miles) and Eastern Punjab Railway (1,770 miles), to suit the provisional India-Pakistan frontier, by A. G. Hall, general manager, North Western Railway (India). Map, p. 151, " . . . showing the provisional partition between the Dominions of India and Pakistan" and gages. *Distribution of Engines and Stock,* p. 152. *Workshop and Stores Problems* p. 152; *Division of Fixed Assets and Future Accounting,* p. 152, mentions: "Fixed assets will be divided on the principle of their geographical location, . . . The revenue accounts will be operated for the undivided railway until August 15, after which all expenditure and receipts will be booked in separate accounts . . ." *Wholesale Transfer of Staff* ". . . between Dominions . . . The new headquarters of the Eastern Punjab Railway has to transfer to Delhi before partition; the newly-formed Pakistan Government will move shortly to its future headquarters at Karachi. . . ." pp. 152-153. Editorial comment: *Unprecedented Partition of a Major Railway,* pp. 143-144, ". . . by August 15, the *de jure* date of partition. . . "

(3) *The Structure of Indian Railway Organisation.* August 22, 1947, pp. 200-201.

Pilgrim's Progress . . . By Rail — This Pilgrim Returns from a Cross-Country Trip Resold on America, the Wonderland, and on the Railroads' Opportunity, by Thomas J. Deegan, Jr., public relations director, Chesapeake & Ohio Lines and Federation for Railway Progress. " . . . This Pilgrim's Progress by rail was made in three parts: In one, Robert R. Young, founder and chairman of the Federation for Railway Progress, was the spearhead; in another year president, William C. MacMillen, Jr., and this reporter combined forces; and in a third F. J. McCarthy followed up to convert into dues-paying members the hundreds and thousands of persons who found in this message of railway progress the first enlightened viewpoint on America's basic industry in a century. These three were joined on the West Coast . . . Throughout this journey those concerned attemped at all times, while en route at least, to be just another set of travellers. . . In order to get a cross-section, from a passenger point of view, we used a range of accomodations, from compartment to upper berth, on both regular trains and extra-fare trains. . . . " (p.4)

The Railway Digest—Summer 1947— featuring articles of lasting interest about railways of all countries, fully authenticated. Editor: Ernest W. Barnes, Lansdowne House, Lower Teddington Road, Kingston-on-Thames, Surrey, England, to whom correspondence about contents should be addressed. Honorary Associate Editors include: (in) ". . .U. S. A.: Thos. E. Owen (Louisville), R. E. Horner (Roanoke)." Published by George Lapworth & Co., Ltd., Vernon House, Sicilian Ave., London, W. C. 1, England. Price: 2 shillings ninepence "post free to all parts of the world". ". . . Until paper restrictions in Great Britian are relaxed the Railway Digest can only appear at unspecified intervals, but due notice will be given of publication dates. . . " (p.1), and on p. 64, ". . . Our next number . . . to be published in November 1947." Illustrations and maps included in its 64 pages.

In addition to the above, your Editor wishes to call the attention of our membership to the "Georgia Railroad & Banking Company; 1833-1945," by one of our members, Mary G. Cumming. Dedicated to the memory of Bryan Cumming, for fifty-nine years, 1884-1943, attorney for the above company, Mrs. Cumming has ably succeeded in presenting an interesting historical narrative of this enterprise. Based on the corporate records that are still preserved, this biography of this early railroad and bank and its men, is of more than a passing interest. Chartered as the Georgia R. R. in 1833, the first in that state. the charter was amended to include the banking privilage in 1835 when the present name was adopted. The Georgia R. R. is now held under a joint lease, dated 1881, by the Louisville & Nashville and Atlantic Coast Line Railroads, the banking business was turned over to the Georgia Railroad Bank in 1892, a separate corporation, majority of stock is owned by the Ga. R. R. & B. Co. Copies of this interesting 110 page, illustrated history, may be procured by addressing the Georgia Railroad & Banking Co., Augusta, Georgia. There is no price but the edition limited.

In Memory of

J. D. Lovell

Annual Member

701 Clark St., Hollidaysburg, Pennsylvania

Who died on August 26th, 1947

Paul E. Parrish

Annual Member

304 West 12th St., Charlotte (2), N. C.

Who died on Oct. 18th, 1947

Index to Articles Appearing in Bulletins 69, 70 and 71 1947

Bulletin No. 69 is devoted entirely to the history of the Western (Massachusetts) R. R.